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NON-ATTENDANCE AT SCHOOL.

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FROM recent statistics, it appears that there are in Pennsylvania about 950,000 young persons, between the ages of 6 and 21 years. Of these there are in common schools, normal schools, academies, seminaries and colleges, 837,293, to which we may add several thousands, as a liberal allowance for schools not reporting to the State Superintendent—making a total of 840,000 pupils actually attending school. This is better than the reports of former years, but it still leaves 110,000, or *more than one-ninth* not attending school at all. Making a liberal deduction for those who cannot attend school on account of ill-health, or on account of extreme poverty, the appalling fact remains that with all our educational facilities, so freely provided by the State and by private liberality, fully *one-tenth of our youth are growing up in ignorance*. From this class will be drawn a large percentage of those who will, hereafter, fill our alms-houses and prisons. They are forming, or have already formed, idle and vicious habits. Some are already far gone in iniquity; others—many of them, we hope—may still be reclaimed.

Can the State allow so many of her sons and daughters to go to ruin? If not, how shall they be reached and saved? Wise legislation might reclaim many of them. But what is wise? Some would inflict a penalty upon the parent for not obliging his children to attend school regularly; others would have truant children taken up and treated as vagrants; others would have an officer in every district to look up absentees; whilst others would entail political disabilities upon the young man who cannot read and write at the age when he becomes a legal voter, as the law now stands. No one of these measures has the merit of being unobjectionable. Some of them, by exciting the worst passions of the worst class, might damage our whole school system, and through prejudice prevent it from reaching many whom it now benefits. Ill considered legislation would aggravate instead of lessening the evil. And yet thoughtful men all over the State feel and know that something must be done to prevent an army of criminals from growing up and multiplying itself. The life and property of good citizens cannot be thus imperiled. As a mere question of political economy, is it cheaper and better to arrest, try, convict and punish 50,000 criminals, than to inaugurate and carry out measures that would save a large majority of them from a life of sin and shame? Their productive industry alone, in a country like ours, would more than repay all the expenditures and effort needed to train them to a virtuous manhood. Reason and Christianity alike forbid that they should be allowed blindly to destroy themselves. But how should they be reached and trained, as it were, in spite of themselves? This is just the question to be met and decided upon. It is not right to throw the whole responsibility upon our Legislature. It is not reasonable to ask or expect that they, with a thousand other interests demanding their attention, will take either the pains or the time that would be necessary to fully investigate the question. The best remedy for an evil so widely diffused as non-attendance at school, can only be devised after receiving a clear expression of the views of the most intelligent men where the evil exists.

As a means of obtaining these views, allow me to suggest that this subject be taken up and discussed in all our School Districts. Every good citizen should feel a deep interest in it, The success of the gospel, the physical and moral health of the community, and all our social interests are closely connected with, and largely dependent upon, the intelligence of our people. Let ministers, physicians and lawyers, as well as teachers and directors, meet and state their views freely and fully, not for the empty purpose of winning a debate, but for

the purpose of arriving at the best method to secure the regular attendance of all the children that ought to be in school. Let these meetings be continued until all whose views are entitled to respect have been heard, and then let the views of the district be embodied in a concise report, and handed to the County Superintendent. He will thus learn how his people regard the subject, and can, in his report to the State Superintendent, embody their views. If all this cannot be done this year, let the agitation of the subject be continued until it is known what the people themselves consider best to be done. Out of all the views thus obtained, there could certainly be gathered the leading features of a law that would be sustained and enforced by the people. The way being thus prepared, we venture to say that there would be no difficulty in securing whatever legislation may be necessary to cure an evil that threatens seriously the future prosperity and happiness of our noble State.

In the meantime, let teachers, directors and citizens use their best efforts to secure better teaching, better school furniture, better houses and surroundings. Let the many who now stay away, simply because they "do not like to go to school," be induced, if possible, to attend regularly. The law will then affect only those whom gentler means have failed to reach. Better it should affect them in school matters than in a criminal court.

The plan here proposed would impose additional labor upon county superintendents, many of whom are poorly paid for the labor they now perform. It might, however, enable them to make their schools better. If any simpler plan can be proposed, we are ready to welcome it. Our sole aim is, to reach and bring into school every child that ought to be there.

[Our correspondent under-estimates the number of children in private schools, but this scarcely weakens his argument.—Ed.]

THE NEW YORK STATE NORMAL SCHOOLS.

As the Normal school system of this State is in course of development, and as the questions growing out of it naturally excite considerable interest among the friends of education, we suppose ourselves to be doing an acceptable service, in presenting to the readers of the Journal some of the most important facts concerning the growth and condition of the Normal schools of our northern neighbor, the great State of New York. We are indebted for the information we present, partly to the late report of the Superintendent of Public Instruction of that State, and, partly, to other sources. The great fact to which we wish to call the special attention of Pennsylvanians is, that New York, starting out with the plan of establishing only one Normal school, which was unreasonably expected at the time to supply the whole State with trained teachers, was compelled in 1863 to establish a second school, and in 1866 to so broaden out her policy as to provide for the establishment of six additional institutions of the same kind in different parts of the State. And even with all this, there, as elsewhere, the great want of the public schools is well qualified teachers, but a small part of the demand for them being supplied by the eight large professional schools now in operation. The great question remains to be solved in New York as in Pennsylvania, not as to how a small number of highly educated teachers can be prepared to take charge of our high schools, and superintend schools in cities and counties, but as to how the thousands of persons, who are newly called into the teachers' ranks every year to take charge of common country schools, can be prepared in the best manner possible for their work. But our object is not in this paper to open up the discussion of this great question; it is simply to tell what New York has done for Normal schools. The eight New York State Normal schools are located at the following places, naming them alphabetically: Albany, Brockport, Buffalo, Cortland, Fredonia, Geneseo, Oswego, and Potsdam. A few facts, historical and otherwise, will be given in reference to each in turn.

The Normal school at Albany was established, as an experiment for five years, by the Legislature in 1844. The project was originated and the resolution formed to carry it through, at a private conference held in a retired apartment in one of the public buildings, in the city of Albany, by four gentlemen whose names deserve to be everywhere known —Samuel Young, Calvin S. Hulburd, Francis Dwight and Alonzo Potter. The last named is understood to have been the chief mover in the enterprise. The experiment proving successful, in 1848 an act was passed by the Legislature "for the permanent establishment of the State Normal School," and an appropriation made to erect a suitable building. The undertaking, in the beginning, met with much opposition, both in and out of the Legislature, and its final success was owing more, than to all other causes combined, to the ability and heroic devotion of its first Principal, David P. Page, who, however, sacrificed his life in the effort.

The property of this school is now valued at $84,000, and the number of its graduates amounts to 1,709. During the past year it had in all its departments 595 students, of whom 375 were in the Normal school proper, and it received from all sources $23,243.46, and expended $22,970.22.

The Brockport Normal School was opened in 1867, and it has been in operation longer and is larger than any of the schools established in 1866. A large and substantial stone building erected for this school was accepted by the State, in April last, by a commission appointed for that purpose. The estimated value of the new building and other property of the school at Brockport is $122,664. It has only graduated 10 pupils, but had on its roll during the past year 630, of whom 230 were in the Normal department. Its receipts were $16,328.84, and its expenditures $16,009.40.

Of the Normal school at Buffalo, the State Superintendent says, "The building for the Normal and Training School at Buffalo has not yet been tendered to the State, but it is reported to be so nearly finished as to be ready for the furniture. It is estimated that the entire cost, when supplied by the appointments required by the statute, will be $100,000. It is delightfully located on a large and commodious site, embracing an entire block in the northern part of the city." It was expected that this school would open in September last, and it is presumed it did so.

The Normal school at Cortland was opened March 3d, 1869. The village of Cortland in which the school is located bore the entire expense of erecting the building, and, in addition, expended $6,000 to furnish it. The value of the school property at Cortland is estimated at $98,000, and the number of students who attended the school during the past year 782, of whom 135 were in the Normal department. The school received $8,075.00, and expended $7,660.87.

The Normal school at Fredonia seeems to have met with more difficulty in perfecting its organization than the others provided for under the same act, that of 1866, but it is now said to be in a very prosperous condition. The value of its buildings is set down at $97,600, and the number of its students the past year was 559, of whom 96 were in the Normal department. Receipts for the year, $10,415.69, and its expenditures, $9,723.37.

The Normal school at Geneseo went into operation the past autumn. The grounds consist of six acres, and the buildings cost $70,000.

Although not the oldest, probably the best known of the New York Normal schools, is the one at Oswego. This arises from the prominence it has given in its system of training to "object teaching," and to the general interest manifested in that method of teaching throughout the country for the last ten years. The history of the origin and growth of the Oswego school is very similar to that of the Millersville school, in this State, familiar to most of our readers. The Oswego public schools were organized into a system in 1853, and it was soon found by those who controlled the matter, that the work they had undertaken would remain incomplete unless they could secure well qualified teachers to carry it on. The necessity of trained teachers became more manifest when the resolution was arrived at to require instruction to be given in the primary schools in the form of object lessons. Weekly institutes were tried, and proved valuable but insufficient. The board at length concluded to establish a training school for its own teachers; and, in order to secure the best professional skill in "object teaching," the method that had been adopted, Miss M. E. M. Jones, a teacher from one of the best training schools of Great Britain, and eminently qualified to perform the service desired, was induced to come to Oswego, and spend fifteen months in giving instruction to the teachers of the city. Many teachers were attracted from abroad, and such was the favorable impression made upon them, that after Miss Jones left, there seemed to be a demand not only in Oswego, but from many other places, that the school should be continued. This was done, and, in 1863, the Legislature made an appropriation of $3,000 for its support; in 1865, increased it to $6,000; and has since made still more liberal appropriations. It is only just to say that the head and heart of this whole movement was E. A. Sheldon, first, as superintendent of the Oswego schools, and afterward, and now, as principal of the Normal school. The value of Normal school property at Oswego is $74,500, and the school has graduated 314 pupils. The number of its pupils during the last year was 1,007, of whom 432 were in the Normal department. Its receipts for the year were $19,639.63, and its expenses $19,639.63.

The Normal school at Potsdam went into operation on the 27th of April last, and is said to be prospering finely. The value of its property is estimated at $94,849.00. The number of its students during the term was 543, of whom 137 were in the Normal department. Its receipts were $3,790.19, and its expenses $3,390.92.

It should be remarked that while in Pennsylvania the Normal school property belongs to

private corporations, in New York it all belongs to the State. The buildings have been generally constructed, and in some instances furnished by the localities in which they are situated; but in such cases they were presented to the State. In Pennsylvania the State aids the people in the work of Normal instruction; in New York the people aid the State. The two great experiments are worth watching.

POPULAR EDUCATION.

THE newspapers of our State are all believed to be friendly to the cause of education, and, among others, *The Press* of Philadelphia, manifests a particular interest in the subject. Its editors are not only willing to publish reports of educational meetings and educational articles when prepared by others, but they frequently discuss questions relating to education of their own accord, and with an understanding of the subject, and a breadth of view that reflect great credit upon the writers. The following editorial article, under the head of "Popular Education," appeared in the issue of September 26th. It is especially valuable for its exposition of the character of our American systems of education in contrast with that of the most prominent systems of the Old World. Let it be read with the attention it so well merits:

The fourth of the series of great international convocations, for the purpose of comparing notes of social progress, was the Paris Exposition of 1867. The previous occasions of this character had illustrated the fact that those nations which had enjoyed the largest and freest access to the treasures of science and art were the most advanced in physical development and in intellectual and moral power. Intelligence and prosperity were shown to be not merely casual associates, but the necessary correlatives and complements of each other; in fact, sustaining the relation of cause and effect. Enlightened by the results of the previous occasions of this character, the managers of the great Exposition at Paris in 1867 were induced to set apart on that occasion, a grand division designated with great felicity "the Department of Social Science." A "New Order of Recompenses" was created, constituting Group X of the subjects of the Exposition, "with a special view to the amelioration of the moral and physical condition of populations." At the head of this group, in the general catalogue of the Exposition, were placed classes 89 and 90, constituting its educational branch. The number of exhibitors in this department was considerably over a thousand, but from the fact that their subjects were mostly embraced under other heads, their exact number could not be definitely ascertained. Our country was largely represented in this noble work.

The separate objects of exhibition themselves numbered many thousands, illustrating the whole range of the educational work from the material appliances of the infant school to the scientific apparatus of the university. In the park outside the Crystal Palace were erected schoolhouses fully furnished for use, illustrating the methods of practical instruction. Separate pavilions embraced illustrations of the course of study and methods of instruction in schools of agriculture, mining and mechanical industry. In the palace itself numerous halls and alcoves were filled with charts, maps, text books, globes, &c. In fact all the different elements of the grand educational movement of the age seem to have been represented in some part or other of the Exposition, affording a rare opportunity to test the mental and moral progress of our race.

The appreciation of the peculiar excellencies of different nations was indicated by a series of prizes, embracing, first, honorable mention; second, bronze medals; third, silver medals; fourth, gold medals, and fifth, grand prizes. The highest rank of excellence indicated by grand prizes was attained only by two Republics, the United States and Switzerland. This, considered in connection with the small number of her exhibitors in all departments of the Exposition, indicates the pre-eminence, in higher civilization, which free institutions have already secured. In the massive educational establishments of the great powers of Europe, organized, supported, and enforced by authority, using the physical resources of great nations, there were exhibited some results which, of course, the limited powers of popular government could not attain. But for those nobler elements of intellectual progress, which indicate and establish the leadership of civilization, it is found that popular freedom is the most genial inspiration.

The grand difference between the educational systems of Europe and America lies in system. In the older countries of the world everything, sooner or later, settles itself down into a certain routine. This is claimed as a special advantage by the advocates of conservatism, ever ready to defend the abuses of vested interests. It is admitted that for many of the purposes to be attained by schemes of popular education a well settled system is of prime necessity, although that system may embrace many erroneous principles, and may be embarrassed by many defects of application. But the experience of European nations seems to demonstrate that mere system may be pushed to extremes. By hardening into inflexible grooves, a machinery of education may prove to be a restraint upon the free development of popular intelligence, and, to a greater or less extent, an impediment, of real civilization and progress.

European educational systems are especially open to this criticism. The great problem of those mediæval governments is to yield such limited compliance to the spirit of the age as will enable them still to maintain their power. The enlargement of popular ideas and the extension of popular intelligence being fixed facts, the policy of the ruling powers lies in controlling their development as far as possible. Hence education has been made both a State and a Church institution to an extent which we republicans would not tolerate in this country. We are able, however, to appreciate with sufficient accuracy the reasons of this centralization of popular thought around existing institutions. We know that vested interests would be imperilled by the emancipation of the popular mind from prejudices favorable to the perpetuation of present abuses. Hence the anxiety of the powers that be to impress upon the young mind of the nation such a reverence for existing social order as will secure their own hereditary emoluments. From systems of popular education devised by such authorities, and with such narrow views, though we are prepared to expect special cultivation of specific faculties, we have no reason to look for any broad or genial development of the mind as a whole. The great effort is to educate the rising generation into obedient subjects of monarchy.

These systems are ably presented by Commissioner Hoyt in his report on the educational department of the Paris Exposition. The French system is like other departments of French thought and enterprise, daring and comprehensive. It contemplates a wide range of instruction, embracing every grade of advancement from the primary school to the university, but it is open to objection on the score of impracticability in many of its features. It is also seriously crippled by the excessive centralisation of the French political system. The Prussian system, on the other hand, is less demonstrative, but it exhibits the same massive and powerful organization which has given such sweeping and unexpected successes to the Prussian arms in the war now raging. The other German States are remodeling their systems upon that of Prussia. Those of the Latin races in the southern peninsulas of Europe are following the line of general action of the Teutonic nations, but have not as yet developed very striking results.

The Swiss educational system, however, presents a remarkable analogy to our own, and both, in the monarchies of Continental Europe, are stigmatized as the absence of system. In the United States and in Switzerland the local machinery of education is in the hands of the people, and hence its administration presents a great variety of efficiency growing out of the different capacities of local communities to manage it. The local directors are elected by the tax-payers and school patrons in each district, while the general management of each canton or state lies in the state or cantonal government, and not in the general government. Critics imbued with the conservative prejudices of monarchy, and fascinated by the imposing but superficial results of the centralized establishments of Europe, are disposed to a captious contempt for a free popular system. We can afford to admit, for the satisfaction of these gentlemen, that there are disadvantages at the outstart which are not so readily overcome by the latter as by the former. But the enlarged experience of mankind has shown that those results which are the most speedily attained are not the most permanently advantageous.

European systems contemplate the cultivation and polish of specific faculties. The popular systems of Switzerland and the United States aim at the development of the whole mind and the quickening of the sentiment of free manhood. The former having thus narrowed its sphere, it is not at all wonderful that it has the sooner attained its maximum of results. The latter, having embraced wider and nobler aims, must await the ripening fruits of its labors in the glorious future. In spite of classical and scientific learning, and in spite of superior effectiveness in some of the processes of training, our free popular education will sooner or later produce results that will overshadow the grandest achievements of the European systems.

PLAIN PRACTICAL TALKS.

BY A. N. RAUB.

II.—AWAKENING THOUGHT.

IT is a physiological fact that only that food which is assimilated by the system, and which tends to strengthen the physical organs, is of practical use to us. The same is true of knowledge and the human mind. The indulgent father who would carry his boy from the child's infancy to mature manhood, never allowing him to exercise his physical organs, would be committing an error which would be not only unwise, but criminal. But little wiser is our practice in giving unnecessary assistance to pupils. As a rule, it is safe to give pupils no aid where it is at all possible for them to glean knowledge for themselves. Their progress may apparently not be so rapid, and yet it is only apparently, for as regards thorough, substantial progress, there can be no question as to the wisdom of this course.

The most substantial knowledge, and that which we retain longest, is that which we gain by our own active, diligent study. We know this as teachers. There are none of us of any experience who have not gained our most substantial and most practical knowledge since our school-days closed. The school-girl's idea of a *finished* education is a thing of the past. An education with an educated man is never finished; the process continues till the grave closes his career.

Our pupils must not, therefore, be permitted to depend on the teacher to help them out of difficulty. They must be taught to think. It is the only way in which they gain strength. As well might the indulgent father expect his son to grow strong physically when carried in his father's arms, as expect pupils to grow strong mentally without overcoming difficulties by their own efforts.

I know that teachers may make themselves popular by doing the work for their pupils, but this popularity is undoubtedly gained at the expense of the pupils' welfare. Mark here, that I make no objection to a clear, lucid explanation of an abstruse point, such as in the text book is beyond the mental grasp of the child. Here is where the competent teacher proves his competency, in making that clear which before was dark to the child's mind. Here, in truth, is where the real work of teaching is to be done. But the loose habit into which many teachers fall of telling a pupil almost every alternate word of an answer when reciting, or solving the most difficult problems without permitting him to make a mental effort of his own, is detrimental not only to his present progress, but also to his future welfare.

Teachers, show your pupils that they can, with a little thought, overcome many difficulties for themselves. Give them only such assistance, in the parsing or correcting of a sentence, or the solution of a problem, as they absolutely need, and let them discover the rest for themselves. Don't take them in your arms and carry them because the road is stony.

What if now and then they do weary their limbs or bruise their feet, it will make them all the stronger and more careful in the future. The boy who strikes his toe against a stone never forgets to avoid that stone in the future.

A few years ago I asked a class of young persons preparing to teach, the definition of an adjective. They replied in the language of the text-book, "*Any ordinary epithet*," but when I questioned them as to the meaning of the words *ordinary* and *epithet*, I found them as innocent of any intelligent comprehension of these terms as if they had been Apaches from the Texan plains. They had not been taught to think. Their knowledge was that of the parrot when she says, "Polly wants a cracker," without even the desire expressed in the bird's silly prattle.

But a few weeks ago I was in a school where a class in Geography was called up. In answer to a question, they told the teacher that Ithica is noted for being the seat of Cornell University, but could not tell what either a *university* or the *seat* of a university is.

Teaching of this kind is defective because it fails to develop thought, and without the development of thought no strength is gained.

A PROBLEM FOR SOLUTION.

ELIAS SCHNEIDER.

MANY books are published at present. Some are valuable, but a large number are not worth the paper on which the ink is wasted. Those which contain valuable matter are, in many respects, nothing more than a re-production of what we have already. How the mind, thirsting for knowledge, pants for new facts! Notwithstanding the boasting of our age, we are wofully deficient in facts. This is especially so in regard to algebra and plain geometry. Our knowledge of plain geometry extends no further than to the triangle. And even in this respect we are deficient. Let me state the following simple proposition: *Suppose there be constructed an isosceles triangle, whose equal sides are each equal to unity, and whose vertical angle is five times as large as each of the equal angles at the base, what will be the length of the base?* No mathematician can, from our present knowlege of geometry, answer this question. And the answer to this question, brings to mind also our deficiency in algebra. I herewith submit a very simple equation.

$$x^3 + 4x^2 + 3x = 1.$$

The first member of the above may be separated into the following factors:

$$x(x+1)(x+3) = 1.$$

The value of x approximately is .246979603+, but the complete value of x is some expression containing a radical, and equal to an endless decimal.

The above equation I get from a geometrical construction of the heptagon. My value of the elements of this polygon are as follows: If one side of the heptagon is unity, then the radius of circle is $\sqrt{\frac{1}{1-x}} = 1.15238244+$, radius inscribed circle is $\sqrt{\frac{3-1\cdot x}{4-4x}} = 1.03826069+$. If the radius of the circle is unity, then one side of the heptagon is $\sqrt{1-x} = .8677674+$, radius of inscribed circle, $\sqrt{\frac{3}{4}+\frac{1}{4}x} = .9009689+$.

These formulas are obtained from a geometrical construction of the heptagon. If the above equation could be solved, these formulas would also give the exact results desired. I think, however, this is the first construction of this polygon that has ever been put forth. I hope some one will be induced to make an attempt to further our knowledge of the solution of cubic and higher equations. If this is done, I think I will be able to give the exact values of all polygons. I would also add, that there is great beauty in the construction of these figures. The construction of the nonagon is the finest display of the beauty and simplicity of nature's laws that I can find in the whole science of geometry.

The base of the proposed isosceles triangle is $\sqrt{3+x}$. Solve my equation, and we will get it exactly.

THE ROD IN THE SCHOOL-ROOM.

JOHN T. REED, SUPERINTENDENT, LYCOMING COUNTY.

AT this season of the year the Public Schools of this Commonwealth are nearly all in session. Thousands of children are daily gathered within the little school-houses of the State, to be instructed in those studies which will develop and enlarge the faculties of the mind, and be of service to the learner in overcoming the multifarious difficulties of subsequent life. The children thus collected to receive scholastic and moral training, are as different in their nature, temperament, and home culture, as they are in their physiognomy. Some are obedient, mild and gentle in their manners, which shows that home government in their case is what it ought to be; oth-

ers are rude, uncouth, destructive, impudent, and overbearing, which as plainly indicates that when at home, they do about as they please.

Again, some children are quick of comprehension, get their lessons well, and progress rapidly, but are "chuck full" of mischief, though more for their own amusement than the annoyance of any one else; others are sullen, ill-natured, lazy, and constantly concocting some mean trick to provoke the teacher, or create a disturbance in school. With this diversity of intellect and disposition brought together, the teacher is expected to keep a good and orderly school—to "train up the young in the way they should go."

But the question arises, how is the teacher to do all this? "Oh," says one, "he must use moral suasion. Moral suasion is the teacher's weapon." Yes, this sounds very well, but it has little effect upon children who never hear or see anything like moral discipline at home. Another says, "I do not whip my children myself, and no *teacher* shall whip them. My children are good children, and do not need to be whipped, but there is such a one's children; they are bad boys, and need a little flogging, but don't you whip mine; if you do, I'll prosecute you, or I will have you turned out of the school."

This may appear a little exaggerated to some, but it is not. It is only too true, that many parents do not correct their children at home; and for this very reason, they need to be corrected all the more at school. Children that are under no restraint at home, are prone to violate the rules and regulations of the school, and think they are abused when not allowed to do so. And, when complaint is made against a teacher, it is always entered by such as have refractory boys, and are unable to govern them at home. Also, not unfrequently, widows are given to listening to the tales of their children—"who have been whipped and almost killed just for nothing"—and finding fault with the teacher for correcting them. They forget the precept given by the wise man, that "The rod and reproof give wisdom; but a child left to himself bringeth his mother to shame."

Now, that a school should be taught with as little flogging as possible, I agree; but, that a teacher should discard the rod from the school room entirely, is as detrimental to the well-being of the school as it is absurd in theory. As well might we expect the civil law of our country to be obeyed and respected by leaving crime go unpunished, as to have good order and wise regulations maintained in school by leaving disobedient and refractory conduct go unpunished. Nevertheless, it is truly astounding to all true educators, that so large a proportion of every community should be laboring under the hallucination that a school can be successfully taught, under all circumstances, without resort to corporal punishment, and that a teacher has no right to administer it. This erroneous idea so prevalent of late years, is the most formidable obstacle to the progress of our public schools.

But let us see what the properly constituted authority has to say upon this subject. The State Superintendent, J. P. Wickersham, in a late issue of the Common School Code, makes the following comment: "It is absolutely necessary that good order should be maintained in the schools, and that all proper rules, regulations and commands of the teacher should be strictly and promptly obeyed. Hence a necessity exists for a sufficient power to enforce this duty, and, therefore, it is held that the teacher may inflict such reasonable corporal punishment upon his pupils as the parent might inflict for a similar cause."

But again, suppose we refer to the Book of books—the Divine Law—that law upon which all law is based, and see what authority can be gathered from it in support of corporal punishment when it is needed; and surely no one will object to this or doubt its truthfulness. Humanity is the same to-day as it was in the days of Solomon, when he said: "Foolishness is bound up in the heart of a child; but the rod of correction shall drive it far from him." "Chasten thy son while there is hope, and let not thy soul spare for his crying." "Correct thy son, and he shall give thee rest: yea, he shall give delight unto thy soul."

We are, to-day, the same "degenerate plants of a strange vine," and the earliest buddings of life but too sadly prove the corruption from which we spring. "We go astray as soon as we are born." Youth, children, and even infancy, need restraints to keep in subjection the unhallowed propensities which are innate, and which would otherwise break forth in acts of misrule and violence. A child is supposed to possess little knowledge and less discretion to guide his own steps; he must, therefore, be indebted for salutary restraint to his elders, and especially to those who are entrusted with his training. The teacher's authority must be felt and acknowledged, and while his discipline should be kind and affectionate, it must at the same time be uniform, firm and decided.

Yet many teachers to escape trouble, or in the exercise of a false kindness, suffer tempers which might be nipped in the bud, to grow up beyond control, which not unfrequently,

brings the teacher into bad repute, but the gray hairs of parents in sorrow to the grave. Too many parents and teachers discard from their theory of education those sage maxims of wisdom and Scripture, which enforce the necessity of chastisement. Children are by nature perverse, wayward and lawless, and commence early the struggle for the mastery. If not taught to respect authority and fear power, the consequence may easily be foretold: they will become disobedient and disrespectful—in short, the pests of the community. Where the law of reason will not avail, the rod of correction must be substituted. The teacher, in order to prepare his pupil for usefulness here, and immortality hereafter, must repress lawless desires and curb rebellious feelings, by punishment judiciously inflicted. It is false kindness to abstain from just severity, for "he that spareth the rod hateth his son, but he that loveth his son chasteneth him betimes."

Let teachers do this duty, in good faith, and trust to the intelligence and reason of the better portion of every community, and they will succeed, and the schools under their charge will progress, not only intellectually, but in manners and refinement, and prove in every way a blessing to the neighborhoods in which they are located.

VISITING SCHOOLS.

BY A COUNTY SUPERINTENDENT.

THE school law of Pennsylvania prescribes as one of the duties of county superintendents that they "visit, as often as practicable, the several schools" of their respective counties. We believe that such visiting of schools has come to be considered as the principal and most important part of a superintendent's business; and it is really surprising, under the circumstances, the number of miles traveled and the number of schools visited in the course of the year by these officers. But whether anything like a corresponding amount of good follows their labors in this respect may well be doubted.

During the year ending June 1869, 16,378 schools were visited, and the average length of these visits was 1 hour and 35 minutes. As in that year there were 13,936 schools in the State, we have an average of a little over one such visit to each school in a year. In the year ending June 1870, there was a considerable increase in the number of schools visited; but as the State Superintendent's annual report has not yet been issued, we can not enter into particulars.

But if we take the counties separately, we shall not, as a general thing, find even so good an *exhibit* as the above. In some counties, as any one may see who will take the trouble to look the matter up, there were not as many visits made as there were schools in the county; and in others the length of this annual visit was less than one hour. The same state of things is believed to have existed in a few instances in the year 1870, as we see from the table published in the October number of the JOURNAL. The writer of this, among others, did not succeed in visiting all the schools in his county the last year. Still, though a few of us fell off in the last year from our figures of the year before, yet, in the aggregate, there was a considerable increase in the amount of work of this kind in the year 1870 over the year 1869. But, though there was a greater number of schools visited in the school year 1870 than in 1869, yet we find the length of these visits to be the same in both years; and we must remember, at the same time, that the number of schools in the State in 1870 was greater than in the year before, so that perhaps there was really no gain in the average number of visits.

Now, we contend, that it is impossible for superintendents to do much, if anything, more in this respect than they have done and are doing. In a small county, or a city, with thirty or forty schools, especially in a city of this kind where the school term is eight or ten months long, it is quite an easy matter for a superintendent to "run up" the number of his visits to four or five hundred in a year; but in large counties with two or three hundred schools scattered about at an average distance from each other of two or three miles, and where the schools as a general thing are kept open only the mimimum term and that in the most inclement season of the year, it is quite a different matter, and, as it is impossible to do more, we cannot see the great use of doing so little.

Now, what do we propose? One of two things: 1st, Either to modify the present county superintendeney system by so districting the counties as to throw forty or fifty schools in a district, and elect a superintending officer for each district; or, 2nd, Instead of the present expensive and too often useless system of visiting schools, require the county superintendent to hold an institute of two or three days in each district of the county, which, with such visits to schools as any conscientious officer would make without any in-

junction of law, and the general oversight of the system in his county, would occupy his time as much as the present plan, and would be of incalculably greater advantage to all our school interests.

SCHOOL-ROOM ILLUSTRATION.

JOHN G. MOORE.

IN the present article, a few experiments illustrative of the more important "Properties of Matter" will be described. It will be convenient in performing these, as well as many other experiments, to have a few *glass vessels;* those commonly called beaker glasses, arranged in nests of capacity from one to three ounces, and from one pint to a half gallon, will be most suitable. Some quart specie jars, and a dozen test tubes will also be of great utility. In the absence of such vessels, use tumblers, canning jars, etc.

1. *Impenetrability.*—Take a glass vessel of the largest size half full of water, place upon this a piece of wood and press an inverted glass jar into the water. It will be observed that the wood sinks, and that the water rises in the outer jar, but not in the inverted jar. Substitute for the wood a candle about an inch long arranged on a small piece of wood to float it; light the candle and press the inverted jar down quickly over it; the candle remains burning, which proves conclusively that the air prevents the water from rising.

2. *Inertia.*—The inertia apparatus usually consists of a short wooden pillar about an inch in diameter, with a spring arranged beside it. On the top of the pillar is placed a card, on this, a ball; the card is then struck by the spring and driven out so quickly that the ball, in consequence of its inertia, remains. Make a support of the two fingers and thumb of the left hand, on this place, a card and a penny; strike the card horizontally with the middle finger of the right hand; it will fly out, and the penny will be left upon the fingers. A little practice will soon enable the experimenter to use but one finger for the support.

3. *Divisibility.*—Into a quart of water place one grain of nitrate of silver, and a small quantity of common salt. A white precipitate of the chloride of silver will be formed, and render turbid the whole of the water. The grain of nitrate of silver has probably been divided into millions of parts. This property is also beautifully shown by using one grain of prussiate of potash with either muriate of iron or sulphate of copper. If indigo or "blue" can be obtained more easily than the chemicals, an exceedingly small quantity of this substance will color several gallons of water.

4. *Porosity.*—Fill a small vessel with alcohol, and then place gently into it a large quantity of cotton, without permitting the alcohol to overflow. The cotton is supposed to occupy the spaces between the particles of alcohol. A vessel may be filled with water, and then a considerable portion of salt and afterwards sugar may be added; as into a bucket of apples, a number of peas and then some cloverseed can be placed.

5. *Expansibility.*—A thermometer, which should be in every school room, admirably illustrates the expansibility of mercury or alcohol. To hasten the expansion and contraction, breathe upon the bulb, and let the pupils observe the height of the liquid, then place the bulb in cold water, and indicate the difference.

6. *Elasticity.*—A piece of India rubber, an old watch-spring, a bow, or the boys' play-ball will show that when the particles are disturbed, either by blows or pressure, they will tend to resume their original shape.

ELEMENTARY SOUNDS.

THEIR REPRESENTATION AS WELL AS ENUNCIATION IN SCHOOLS.

MR. EDITOR: Hearing that you have taken charge of the SCHOOL JOURNAL, I feel the more induced to beg space in which to present some considerations relative to the teaching of reading and writing in our common schools.

I think Dr. Burrowes rightly puts at the head of many improvements in school practice, which he mentions in the October leader, the general attention now paid in primary schools to secure a full, clear and correct enunciation of the elementary sounds. For they are to speech what the gamut is to music, and certainly a teacher cannot secure for a pupil a more winning and useful accomplishment than an early formed habit of clear and pleasing utterance.

No doubt this practice on the sounds was much encouraged, if not originated, by the many reports and communications published in the SCHOOL JOURNAL nearly twenty years ago, in which we find you were a useful participant. (See Vol. I. 1853, pp. 134, 179, 237, 332, 359, etc.)

Now, that the array of Superintendents and other School officers, under your leadership,

are carrying all useful improvements simultaneously into every corner of the State, the contrast with things as they were thirty years ago, seems rainbow-like indeed.

Is it not time now to advance a step further throughout our primary schools, and give to these sounds individually, a definite representation and name—characters, by which each may be readily identified, and also by which each may be most tersely and conveniently expressed in writing?

I should stop here, and ask for room in another number, for an explanation of a way in which this may be done easily and precisely, but as the subject is attracting public attention, I will, if you can permit, offer very briefly, some views on the subject now:

When a proposition of the kind is made, objections from veteran teachers and literary persons naturally arise.

They say, or they think, "This leads to some change in nearly all the words of the language. The involved old spelling that we have become habituated to, and that we pride ourselves on having mastered tolerably, will be cleared out. Our skill in it will count for nought. We shall be old-fogy-fied, and all our books. Our monopoly will perish!"

Now it is granted as certain, that, eventually, but not in our day, this result will be arrived at. Such a change can only take place gradually. Among reasons why we should take steps to prepare the rising generation for it, and encourage instead of opposing it, are,

1. The criminality of monopolizing the entrances of learning, and especially of our language which contains so much of hope for the world, and which will assuredly soon become universal, gathering all nations into participancy in its Christianizing and civilizing influences, if divested of its crust of irregularities in spelling. All foreigners desire to learn our language, but very few can attain it. Yet, its grammatical structure is simple. The serious difficulty is its barbarous orthography.

2. The cost of valuable time, of tears, of wearied teachers leaving successively their droning occupation for one more hopeful and animating, is incalculable. If it be said that children have time to spare, and that both children and teachers are the better for discipline, we answer that their time is *invaluable*, and that it is neither discipline or enlightenment, but sheer cruelty, to condemn eager young minds to a senseless and stupefying drudgery that refers to neither rule nor reason, nor has any tangible point about it. Those are the years for useful and interesting *objects* to be presented to them, or illustrated lessons that engage the senses.

3. Not only are children rendered stupid and teachers disgusted by this cruel course, but thousands of persons, after years at school, decline to pen a letter, or they do it with abhorrent reluctance, because of the dread of spelling "sicafant rong," and the fear of exposing themselves. They prefer to send a messenger rather than a message, even for a bag of salt, for they may write *c-o-l-t* and have a young horse sent, as Olive Logan says. Even an absent wife must often do with little news from home. A letter might affront her by writing her *yf*, or something else, disparaging and wrong.

4. The want of even an appearance of rule, or order, or method, in these long arbitrary spellings demoralizes pupils. They learn by degrees to disregard *exactness*, *precision*, TRUTH, because they cannot fail to see at the outset of their school life, that these are things more to be *talked* about as admirable and good than to be really regarded in actual practice.

If we cannot emancipate our language from its shackles, it is our duty to train the generation that is in our care to such a familiarity with a phonetic representation of sounds as will enable them in their coming day to see the present absurd and miscalled *orthography* out of use, and the greatest clog to progress removed. The change would not be as great as from the letters of an old Bible of 1630, now before me, to a modern edition.

The best first step for schools is probably a use of the phonographic characters to represent the sounds which are now generally taught as far as enunciation goes, which is far. Their use cultivates precision, exactness, grace; and yields untiring variety. It pleases the artistic sense as well as the utilitarian. It educates the hand and the eye most usefully, and with the copious and universal practice, which the days of primary schooldom would afford, such a gradual and safe progress could be made, and such easy proficiency attained, as would securely prevent any future loss of so valuable an art through want of being well grounded in each detail. It would drop into universal use for ordinary purposes of writing.

Phonographic writing has been taught in some high schools, and has failed to meet expectations, because there has not been time to educate the *fingers* to it. It is so simple and easy for the brain to acquire, that the impatience of sixteen is apt to intervene before the fingers have learned their moves. It should come in at 7 or 8 years with object lessons, primary geometry and geography, and other

exercises on things visible and tangible, before abstract ideas can occupy the attention.

About two years ago the writer was in Bath, England, and paid a visit to Mr. Pitman, the inventor of phonography; and, on seeing the immense demand for his publications, from every corner of the British empire, and much from America, was filled with hope of a good time coming. I never "interviewed" a man in whom I saw such incessant industry, such economy of moments, such ease of management, such fidelity to an object, courage often tried to the utmost, liberality unbounded. His name will stand with the worthiest among men.

As an old worker in the cause of education, I invite superintendents generally to urge upon teachers the advisableness of preparing themselves on the subject of representing the Elementary Sounds in writing, as a qualification that must soon become an examinational requisite in orthography and reading, as well as in writing. W.

INVITING DEATH.

THE New York *Tribune* assigns as a reason for the sad and strange suicide of the boy Garraway, in that city, as instancing the increasing disposition to self-murder among our people. The *Tribune* assigns this particular case to the cramming system of education. The proof which was given last week, says the editor, of the results of this fatal error, is one so pathetic that we would not touch on it were it not already so familiar to our readers, and if we did not think it wrong that the lesson of the beautiful and promising life, so prematurely sacrificed, should be left unread. Here was a boy, inheriting refined tastes and high nervous sensibilities, reared in a scholarly atmosphere, the whole tendency of whose every-day life was to excite his brain to unnatural activity. Besides this, the conformation of his head and his childish habits gave hints of an abnormal action of the brain. "Oil paintings of merit at the age of 11," "Popular essays on self-government and public schools," were indications of cerebral disease, precisely as a scarlet rash would be of measles, and should have been received with alarm instead of gratification. A boy of 15, who devotes himself to metaphysical study, Plato and Comte, instead of base ball and girls of his own age, needs a physician, and not encouragement and laudation. "George," we are told, "refused to take anything on faith; resolved to penetrate into the foundation of philosophy and religion; devoted himself to arguments on the immortality of the soul and the future state of existence." The end came which was only to be anticipated, though it is pitiful enough in the details to bring tears to the coldest eyes. The poor boy's disease becomes aggravated, shows itself in morbid longings to penetrate the future, in unhealthy sentimentalism, until he makes his friend lie down beside him, and drinks the quieting draught which the over-taxed brain imperatively demanded. "Do you like me, Garraway?" says the poor boy, and satisfied, puts his arm, like a sick child, about his friend's neck, and at last falls into sleep and quiet. "I cannot help it," he says, in his touching little farewell. Of course he could not. The whole life and death of this poor boy, so plainly made public, protest against the fatal ignorance which underlies the ordinary systems of education. We should fail in our duty if we did not enforce the protest in the strongest words in our power.

VALUE OF CLASSICAL LEARNING.

THE *Dublin University Magazine* has some admirable remarks upon the value of classical learning, which may be properly re-produced at a time when the tendency is strongly in favor of what is called practical education. In respect to the *discipline* of this sort of study, which has been said to be small compared with that of mathematics or natural science, the writer says:

"The difficulty involved in learning a dead language is an excellent feature in this discipline. They must be learned by rule—a call is made on the mind to perceive the relations of grammar at the very outset. A Greek or Latin sentence is a nut with a strong shell concealing the kernel—a puzzle demanding reflection, adaptation of means to an end and labor for its solution, and the educational value resides in the shell and in the puzzle. Such a sentence compels a boy to think, whether he is toiling at the first page of the Delectus or on the airy heights of Plato, and that is the solution—the Q. E. D. of the problem. His faculties are strongly exercised. The necessity to have many tools in his workshop, and to employ many trials and much skill in their application, grows with every step of advance gained. And what are these tools? what these resources of thought? what these applications of mental power and acquired knowledge which are ever set in motion in the study of a classical author? They range over every part of the student's intellectual being; each accumulated force, or fact, as it is acquired, becomes

in time an instrument—a necessary and indispensable instrument—for achieving new conquests, for mastering greater authors and harder writings.

"But mind under training, whether it animates the little urchin in the second form, or holds the ambition which gazes on university honors, ay, or is even the depository of the lore of a Greek Professor, is compelled at all moments to perform acts of perception and judgment, to observe distinctions, to discriminate and to select. It appeals to the Lexicon, but only to find an array of meanings, shades of signification, and to encounter the perplexities of a choice, which cannot be made without mental effort—that is, without mental progress. In a modern language, the familiar sound of the accompanying words, the accustomed flow of the usual thought, the similarity of the expression to the forms of one's own native tongue, render the task of comprehension easy. But in a dead language, where all is strange, where association does not instantly and unconsciously bring up the sense of each single word, where the mode of thinking is unfamiliar, where the links that bind many words into one sentence have to be sought in unusual terminations and at distances of several lines, and then only by carrying in the intellect the laws of grammar and of logic, to study and to master the thought and the expressions of a great writer, is a truly educational process, leaving the mind, on its final success, stronger, more able to use itself, richer in new insights, new perceptions, fitter for yet more powerful exercise. Nor does the difficulty dwell in the strangeness of the words alone. Many things must be had recourse to, many resources of knowledge called into help, before the understanding can grasp the sense, not only of a Thucydides or a Tacitus, but also of a Cæsar or a Xenophon.

"The general character of the subject written about, the scope of a large paragraph, acquaintance with history, with geography, with endless details of many arts and sciences, the laws of politics, the principles of moral life, all must be brought to converge on the obstacle before its resistance can be overcome. And here it is also where the greatness of the classical writers produces its richest fruits. The mind of the student is compelled to dwell on every utterance, to examine minutely every expression, to master its intrinsic meaning, and then its relation to its companions in the sentence, to reflect whether the suggested translation will meet the requirements of the reasoning, of the general purport, of the context, of the broad aim and complex thought of the writer."

In this connection we may call attention to a new volume illustrating this same subject. It is entitled "Classical Study," its value illustrated by extracts from the writings of eminent scholars, edited with an introduction by Samuel H. Taylor, LL. D., and published by Warren F. Draper, of Andover. The selections are admirable, and Dr. Taylor's introduction is an unanswerable argument to the opponents of classical study.—*N. Y. Observer.*

MORAL EDUCATION.

IT is impossible to fully estimate the blessings that have followed the earnest promotion of education in this country. From its earliest settlement the instruction of the mass of the people has been one of its chief characteristics, and the results that have been manifest in an enlightened, prosperous and happy community have richly rewarded every effort in that direction. But there is always danger where any public advantage is pursued with eagerness and continuity, lest it become more strong in its outgrowth than full and rounded in its nature, and in this matter of education we are not wholly without danger, lest in our zeal for the intellectual improvement of youth, we forget that only as a careful, moral training goes hand in hand with mental discipline can they be said to be thoroughly educated.

It is a truth abundantly proved in some countries, that the simple communication of instruction, without any corresponding moral influence being brought to bear, fails to secure that rounded and well-balanced improvement which we desire for the rising generation. Cousin, a distinguished French philosopher, made deep researches into the subject of education, both in his own country and Prussia, from which he proved that where even the best systems of education prevailed, apart from religious and moral influence, there crime was the most fully developed. Knowledge is undoubtedly a power, but one that is not wielded by moral principle will be devoted to selfish and unholy purposes. Indeed, every accession of knowledge brings with it a new responsibility, and it should be as much the aim of the instructor to implant the sense of this responsibility and of its consequent duties as it is to impart the instruction. This is the great truth of education that we are in danger of overlooking. We are rightly anxious to instruct our youth in the various branches of knowledge; we take pains that their minds shall be disciplined, that their reason shall be cultivated, that their powers shall all be

strengthened to the utmost; but we are not equally zealous to implant those principles in the heart which shall guide into noble and virtuous directions the powers we have thus called forth. True education is the preparation of the whole nature for the scenes in which it is to play its part. It is not too much to expect, therefore, that our youth be made to look forward in some degree to the responsibilities which, in after-life, they must assume; that they be taught the great principles of justice and the beneficence that form the foundation of good citizenship, and the candor and courtesy that will enable them to fill worthily their social relations. The principles of religion, in its broadest sense, must be combined with mental discipline, if we would truly educate the rising generation. It may be said there is no time for all this in our schools, limited as are the hours and manifold the tasks. It would be far better for the permanent welfare of the pupils for their mental and moral training to go hand in hand, even though the former be pushed with less rapidity. There are few more favorable fields for the practical inculcation of the great moral virtues than the school-room, and the teacher who will punish inattention or the failure of memory, while deceitful and dishonorable practices pass unreproved, is warping the child's conscience, and inflicting an injury upon his moral future.

Still, although much more of this moral education ought to be infused into school life than is now attempted or supposed possible, yet *home* is the chief source to which we must look for the influence which is to mould the heart and order the life. Parents are too apt to think, when they have supplied good schools for their children, and supplied their material wants as liberally as their means allow, that their duty is accomplished. There are blessings within the power of parents to bestow that no money can purchase, and that only themselves can confer. To them especially is committed the trust of infusing into the hearts of the young those great principles of virtue which should be their guide through life; and if they prove recreant to this sacred trust, they will look in vain for others to perform it. Neither will occasional precepts be sufficient to accomplish this great work. The influence of a daily life, actuated by right motives, and exhibiting continually the beauty of goodness, is more effectual in winning the hearts of the young than the wisest precepts. Happy are those children whose homes afford bright examples for their imitation, and who look up to their parents, not only with the unbounded love and confidence that should ever exist in that relation, but also with the honor and respect that only real worth and goodness can call forth. With such mental discipline and moral training go on hand in hand, and theirs will be a true, because a well-balanced education.

Phila. Ledger.

Beautiful Surroundings.—Man's nature is so marvelously constituted that he is reached and moved through the avenues of every sense. The spirit within him resembles a harp, the strings of which, as they are swept by every breeze, give out respondent tones. The music which strikes the ear summons answering feelings in the heart which is touched by the plaintiveness, or exalted by the cheerfulness of the strain. The beauty which meets the eye, whether it is spread abroad in the glory of some noble prospect or blooms in the beauty of the opening flower, touches a chord within which responds to the outer influence. Thus the external world with its sights and sounds, and even subtler influences, often unrecognized, is ever reaching toward and affecting men even when they are most unconscious of its influence.

The lesson of this is that all, so far as possible, should surround themselves with objects calculated to excite pleasurable emotions. The wealthy generally do so; the instincts of a cultivated nature make the demand which their resources are adequate to meet; but the poor too seldom give sufficient thought or care to this. Yet there are few so destitute that they may not, if they will, bring a portion of the brightness, and the beauty of God's rich world into the circle of their own immediate lives. A picture hung upon the wall—and better a single good one than a score of daubs—a singing bird, hanging in its cage and sending the thrills of song, born of its joyous life, through all the dwelling; a flowering plant or two, breathing their fragrance on the air while they win the eye by the beauty of their glowing petals—these are within the reach of all, and, humble as they seem, they bring the ministries of beauty to the heart.

Men grow into the likeness of that which they constantly look upon. Beauty or deformity, alike, daguerreotype their images upon the heart; and it is, perhaps, to the wretchedness of their material surroundings that much of the grossness and vice amongst the poorer classes may be traced. Even a shade tree before one's dwelling is of value, while a garden spot, however small, from which the meek-eyed flowers look up to him who tends them, is like an open page in a volume filled with lessons of purity and peace.

THE WORLD'S BIRTH-DAY.—No. VI.

PLANTS AND THEIR SEEDS.

FAMILIAR LECTURE TO A SABBATH SCHOOL.

"And God said, Let the earth bring forth grass, the herb yielding seed, and the fruit tree yielding fruit after his kind, whose seed is in itself, upon the earth: and it was so. And the earth brought forth grass, and herb yielding seed after his kind, and the tree yielding fruit, whose seed was in itself, after his kind: and God saw that it was good. And the evening and the morning were the third day."—Gen. i: 11–13.

WE concluded our last lesson with the mere mention of the most magnificent of the works of the third day—the first appearance upon earth of the wonderful family of plants. Let us consider this interesting subject for a little before we go on to the work of the fourth day, when God caused lights to shine in the sky, to divide the day from the night, and to measure the time.

Remark, I pray you, these words, "*And God said.*" Do not believe, as some self-styled philosophers pretend, that all the wonders of creation are unfolded before your eyes, by some power in themselves, in obedience to the laws of nature once established. Do not imagine that light, the atmosphere, the plants, fishes, reptiles, birds, beasts, and lastly, man himself, have sprung naturally from the earth or the waters, as smoke mounts upward, as a stone falls to the bottom of the water, or as a bird springs from the egg, simply by the operation of rules and laws established at the beginning of the world. No! "*God said*"—this was the true cause and first beginning of all things. All the great changes, all the new creations of which we read, were produced by the power of his almighty word. "*God said,*" and everything had its being. "*God said,* Let there be light; and there was light." "*God said,* Let the earth bring forth grass, herbs, and trees;" and the earth brought them forth. Ah, dear children, when you read the Bible, and when you pray, ever remember the mighty power of the word of God. Repeat to yourselves that the word of God is powerful—all-powerful.

"*That it was good;*" that is, that it was magnificent and sufficient—perfect in beauty, perfect in usefulness, perfect in abundance, perfect in fruitfulness, perfect in continuance, perfect in variety and immensity. *Living* plants and trees are created, which have their seed in themselves—the seed from which they are renewed, raised up again from generation to generation, from age to age, till the end of the world. Have you considered how very wonderful this is?

Have you ever thought what *life* is? for it was then that life appeared for the first time upon the earth. The air, the winds, and the tempests have no life; the sea, dry land, the mountains, the valleys, the rocks, the volcanoes, and their flowing lavas, have no life—a gas has no life. But a tree and a plant have life, although they have not thought or feeling Consider how the plant is born and grows: it springs from its seed as the bird springs from the egg; it pierces the soil; it grows up; it is fed by the juices of the earth through the hundred mouths of its roots; it drinks through its leaves the air and the dew of heaven; and it faithfully gives out in return its delicious odors. We know that it even breathes—it inhales and exhales the air; it sleeps in the night, and is revived to new beauty and vigor in the day. A life-giving juice circulates through all its vessels, as the blood circulates in our veins. Every year it gives birth to numerous children, which resemble the mother-plant, and live, and grow, and breathe, and bring forth other plants in their turn.

I spoke to you in the last lesson of the rocks which have been formed by deposits under the waters of the sea; of the gases which, on the second day, were mingled to form our atmosphere; of the dry land which rose above the level of the waters; and of the depths which were prepared to receive the "gathering together of the waters." In a certain sense we might say that all these were formed by the action of the fire, of the waters, of the gases, and of all the elements working upon each other, according to fixed laws given in the beginning. But what a difference is there when we come to the appearance of plants! It is no longer a development or a transformation which takes place; it is a new creation—it is life. Is it for a moment to be supposed that a cedar, an olive-tree, a sycamore, a vine, a rose, a narcissus, a hyacinth, a lily could spring of themselves from the dust of the earth, with their bulbs, their roots with hundreds of mouths, their beautiful cellular tissue, their sap-vessels, their pith, their leaves with hundreds of pores, their buds their lovely flowers and delicious fruit?

Scientific men have succeeded in imitating some of the natural rocks in their laboratories. By taking chalk, silicium, vegetable matter, and other things, and subjecting them to strong heat and powerful pressure, they have been able to manufacture, in small quantities, marble like that of our mountains, coal such as we burn in our fires, crystalized silicates like the granites of the Alps, and even a few small fragments of precious stones. But do you suppose that any chemist could succeed in making a living plant, even a blade of grass, a sprig of hyssop, a morsel of the humble moss that grows on the wall, a strawberry-plant, a blue-bell, or a field daisy?

All the greatest triumphs of human art and skill have been lately collected in the Exhibitions of London and Paris; but if all the mechanics who made these, and all the learned men in the world were united, and if they were to work together for a thousand years they could not form one living grain of corn, one seed of a living poppy, one seed of any kind, containing within it, infolded in the germ, 10,000 plants of corn, or 100,000 plants of poppies, proceeding from and succeeding each other from this time till the end of the world.

This brings me back to the 12th verse: "*And the earth brought forth grass, and herb yielding seed after his kind, and the tree yielding fruit, whose seed was in itself, after his kind: and God saw that it was good.*"

Ah, my friends, when we read these words we are ready to exclaim with the Psalmist, "O Lord, how manifold are thy works? in wisdom hast thou made them all: the earth is full of thy riches" (Ps. civ: 24). Oh, how great is the wisdom of God! the power of God! the abounding riches of God! the goodness of God!

First. How great is his goodness! See how it is displayed even on the third day of creation, on the earth which he is preparing for the abode of man! Consider the beauty of the plants! Our earthly dwelling-place might have contained nothing but what was absolutely necessary for our food and clothing. For example our food might have been produced on the surface of the earth, without appearance and without beauty; or the dust of the ground might have been made fit to nourish us, so that a man might have been able to lift from the soil a handful of earth for his food, just as he takes up water from the stream in the hollow his hand to quench his thirst. But, on the contrary, it has pleased God that we should receive our food by an ever-renewed miracle—the miracle of the wholesome bread springing every year from the furrows of our fields, that it may repeat to us every day: 'Ungrateful that you are, it is your God that feeds you.' But he has done even more than this. He was

pleased to prepare our future dwelling-place to receive us, as a tender and affectionate mother prepares her house to receive a long-absent child. How carefully she adorns her dwelling! How pleased she is to arrange and ornament the room where her dear child is to sleep! Everything in the house expresses her tenderness and joy. There are nosegays in every room, lovely wreaths over every door, flowers are strewed even on the very steps of the stairs where her darling is to tread.

With such love did our heavenly Father prepare this earth for us, his unworthy children. He adorned the world with beauty, as if for a festive day. It was His sovereign will that every mountain, every valley, every lonely island of the sea, should unite in telling us of the riches of His love. The whole earth was covered with a soft carpet of brightest green; and there was one spot lovely beyond all others, the Eden, the very paradise of flowers, where every tree was crowned with wreaths of blossom, and loaded with the most delicious fruit. And to-day the delightful coolness of the woods, the beauty of the rich orchards and flowery meadows, the fields covered with daisies, violets, anemones, bright roses, and pure lilies, and all the lovely family of flowers which are clothed by the great Creator's hand—all these have a voice, which is ever saying to us: "Praise the Lord, for he is good, and his good nessendureth forever."

Have you ever read the well-known anecdote of the famous traveler Mungo Park: On one of the most trying and miserable days of his African journey he was alone, troubled in mind, worn out, and almost despairing—he thought himself lost. He lay down weary and exhausted on the ground, under a burning sky; he thought that he was doomed to die far away from home, and from all the tender care of those who loved him. Hope had almost fled, when he saw on the dry, sandy soil, a little moss growing, green and fresh even in the desert. The sight of it roused him to new hope. He remembered the power of the great God who had formed and preserved the little plant. He felt that his great Creator is everywhere present, all-powerful, plentiful in mercy, abundant in goodness and truth, and that his works proclaim his glory and his faithfulness even in the burning deserts of Africa. This thought gave fresh courage to the lonely, weary traveler. He shed tears of grateful joy even in his solitude; his courage revived; he rose, went on his way, and was delivered.

When we think of these things, dear children, there is one thing that we ought never to forget, and it is this: If the earth that we now behold is so lovely and glorious, even now when it has been polluted by sin, what must it have been in its first fresh beauty, when it rose into being at the great Creator's word? When God looked on it then, he said that it was "very good;" but afterwards he cursed the ground for man's sake. He said to Adam, "Cursed is the ground for thy sake; in sorrow shalt thou eat of it all the days of thy life: thorns also and thistles shall it bring forth unto thee." When we admire its beauty now, let us try to picture to ourselves what it must have been, when the great Creator saw that it was "very good."

But now think again of the wonders of the third day's work. Have you considered how wonderful a thing the seed of a plant is? It is the miracle of miracles. God said, Let there be plants "yielding seed;" and it is further added, each one "after his kind."

The great naturalist, Cuvier, thought that the germs of all past, present and future generations of seeds were contained one within the other, as if packed in a succession of boxes. Other learned men have explained this mystery in a different way. But what signify all their explanations? Let them explain it as they will, the wonder remains the same, and we must still look upon the reproduction of the seed as a continued miracle. Is there upon earth a machine, is there a palace, is there even a city which contains so much that is wonderful as is enclosed in a single little seed—one grain of corn, one little brown apple-seed, one small seed of a tree, picked up perhaps by a sparrow for her little ones, the smallest seed of a poppy or blue-bell, or even one of the seeds that are so small that they float about in the air invisible to our eyes? Ah! there is a world of marvels and brilliant beauties hidden in each of these tiny seeds. Consider their immense number, the perfect separation of the different kinds, their power of life and resurrection, and their wonderful fruitfulness!

Consider first their number. About a hundred and fifty years ago the celebrated Linnæus, who has been called the "father of botany," reckoned about 8,000 different kinds of plants; and he then thought that the whole number existing could not much exceed 10,000. But, a hundred years after him, Candolle of Geneva described 40,000 kinds of plants; and at a later period he counted 60,000, then 80,000, and he supposed it possible that the number might even amount to 100,000. Well let me ask you, have these 100,000 kinds of plants ever failed to bear the right seed? Have they ever deceived us? Has a seed of wheat ever yielded barley, or a seed of a poppy grown up into a sun-flower? Has a sycamore tree ever sprung from an acorn, or a beech tree from a chestnut? A little bird may carry away the small seed of a sycamore in its beak to feed its nestlings, and on the way may drop it on the ground. The tiny seed may spring up and grow where it fell, unnoticed, and sixty years after it may become a magnificent tree, under which the flocks of the valleys and their shepherds may rest in the shade.

Consider next the wonderful power of life and resurrection bestowed on the seeds of plants, so that they may be preserved from year to year, and even from century to century. Let a child put a few seeds in a drawer, and shut them up, and sixty years afterwards, when his hair is white, and his step tottering, let him take one of these seeds and sow it in the ground, and soon after he will see it spring up into new life, and become a young, fresh and beautiful plant. M. Jouannet relates that in the year 1835 several old Celtic tombs were found near Bergerac in France. Under the head of each of the dead bodies there was found a small square stone or brick, with a hole in it containing a few seeds, which had been placed there beside the dead by their heathen friends, who had buried them perhaps 1,500 or 1,700 years before. These seeds were carefully sowed by those who found them, and what do you think was seen to spring up from this dust of the dead?—beautiful sun-flowers, blue corn-flowers and clover, bearing blossoms as bright and fresh and sweet as those which are woven into wreaths by the merry children now playing in our fields. Some years ago a vase hermetically sealed was found in a mummy-pit in Egypt, by the English traveler Wilkinson, who sent it to the British Museum. The librarian there having accidentally broken it, discovered in it a few grains of wheat and one or two peas, old, wrinkled, and as hard as stone. The peas were planted carefully under glass on the 4th of June, 1844, and at the end of thirty days these old seeds were seen to spring up into new life. They had been buried probably, about 3,000 years ago, perhaps in the time of Moses, and had slept all that long time, apparently dead, yet still living in the dust of the tomb.

Lastly, consider the almost incredible fruitfulness of these marvelous seeds, for it is in this that the divine all-power of the great Creator is most clearly shown in his glorious work of the third day.

When I give a chestnut to a little child, think how much is clasped in its tiny hand—not only the magnificent chestnut-tree which might spring from the chestnut but also all the thousands and thousands of chestnut trees which might be produced from it, generation after generation, even to the end of the world.

"Lo! on each seed, within its slender rind,
Life's golden threads in endless circles wind;
Maze within maze the lucid waves are rolled,
And as they burst, the living flame unfold,
The pulpy acorn, ere it swells, contains
The oak's vast branches in its milky veins,
Each ravell'd bud, fine film, and fiber line,
Traced with fine pencil on the small design.
The young narcissus, in its bulb compress'd,
Cradles a second nestling on its breast,
In whose fine arms a younger embryon lies,
Folds its thin leaves and shuts its floret eyes.
Grain within grain successive harvests swell,
And boundless forests slumber in a shell."

I have heard it said that a very well-known traveler, who returned from America to Europe between two and three hundred years ago, having admired in the New World this beautiful tree, then unknown in Europe, had put two or three chestnuts in the pocket of his coat. After his arrival in Paris, having put on the same coat again he found a single chestnut still remaining in his pocket, and he took a fancy to plant it in the court of his house. The following spring a young chestnut tree appeared, which grew and flourished, and became the parent, not only of all the chestnuts in France, but of all the magnificent trees of this kind under which the people of France, Germany, and Italy assemble on their days of festival. These all sprang from the solitary chestnut brought from America in that traveler's pocket.

Such is the fruitfulness of seeds apparently insignificant, that the botanist Ray tells us that he counted 2,000 grains of maize on a single plant of maize sprung from one seed. 4,000 seeds on one plant of sun-flower, 32,000 seeds on a single poppy plant, and 36,000 on one plant of tobacco. The naturalist Pliny tells us that a Roman governor in Africa sent to the Emperor Augustus a single plant of corn with 340 stems, bearing 340 ears—that is to say, at least 10,000 grains of corn had been produced from a single seed. In modern times Buchez tells us that 12,780 grains have been produced by a single grain of the famous corn of Smyrna, called "the miraculous corn."

But what do you think of the wonderful reproducing power of seeds when I tell you that from a single poppy seed, not larger than a grain of gunpowder, there may spring in four years poppies enough to cover all the habitable earth—that is to say, one-fourth of the surface of the globe, or about fifty millions of square miles? If each seed should produce as much as Ray calcuates, I have reckoned it would amount in four years to a million of millions of millions of seeds; which may be estimated at 660,000 bushels (or 82,500 quarters), and would be more than enough to cover the five continents of the earth. All this immense multitude of seeds might spring in so short a time from a single little seed, not nearly so large as a grain of oats.

Now, let us try to calculate the productive power of a grain of corn. All historians tell us that in old times the harvests of Egypt and Syria returned a hundredfold for one, and in Babylonia two hundredfold for one.

Well, I can prove to you that if I were to sow a single grain of wheat in a soil as fertile as this, I might be able at the end of eight years to supply all the families on the earth, for more than a year and a half, with the product of a single harvest of the corn sprung from my one grain. It is reckoned that in France, where bread forms a large proportion of the food of the people, each person on an average, consumes a pound of bread a day, or about six bushels in the year. It is supposed there are 1,200 millions of people on the earth; so that, at this rate, about 7,200 million bushels, would be required every year for the whole human race.

Well, suppose that I were to sow my grain in a soil as fertile as that of Egypt is said to have been in old times my first harvest would be 100 grains; these 100 grains would produce 100 times as much for my second harvest, or 10,000 grains; my third harvest would be 100 times 10,000, or 1,000,000 grains; and my fourth, 100,000,000 grains. It has been reckoned that there are about 820,000 grains in a bushel. At this rate my fourth harvest would yield about 122 bushels of grain, and four years after it would be 100,000,000 as much, or 12,200,000,000 bushels. This is scarcely one-sixth less than twice the quantity which we reckoned would be necessary to supply the whole human race for a year.

Thus in eight years as much corn might spring from one seed as to supply all mankind with bread for more than a year and a half.

Remark also, my friends, that God has not given the reproductive power of plants to their seeds alone. The life of vegetables exists in many parts of them separately, and each of these parts alone, separated from all the others, can reproduce the whole plant. Each bud, each shoot, each branch of many kinds of plants, may be planted separately, and will send forth roots, and soon become an entire plant, and the parent of a new race, not less numerous than if it had grown from a seed.

Ah, my friends, at each new discovery of the wonderful works of God, we are forced again to exclaim, "O Lord, how *manifold* are thy works! in wisdom thou hast made them all; the earth is full of thy riches." What wisdom and abounding riches are to be seen even in the humblest and apparently the most insignificant of the works of God—in a bud, in a tiny shoot, in a grain of wheat or oats, in a little root, or even in one of the smallest seeds which float invisible in the air, and yet carry within them so much beauty, so much fruitfulness, such power of life and resurrection from age to age! Honor, glory, praise, and adoration to our God, Father, Son and Holy Spirit, the almighty Creator of the heavens and the earth!

Our next lesson will be from the 14th to the 19th verse of the first chapter of Genesis, along with the 8th Psalm.

A wonderful thing is a seed—
The one thing deathless forever!
The one thing changeless, utterly true,
Forever old, and forever new,
And fickle and faithless never.

Plant blessings, and blessings will bloom;
Plant hate, and hate will grow;
You can sow to-day, and to-morrow will bring
The blossom that proves what sort of thing
Is the seed, the seed that you sow.

You are sowing your seed in the daylight fair,
You are sowing your seed in the noonday's glare,
You are sowing your seed in the soft twilight,
You are sowing your seed in the solemn night;
What shall the harvest be?
Oh, what shall the harvest be?

EDITORIAL DEPARTMENT.

Pennsylvania School Journal.

LANCASTER, FEBRUARY, 1871.

J. P. WICKERSHAM, J. P. McCASKEY.

The date after the printed address of each subscriber shows the last number for which he has paid; thus, "S. E. Butler, Je 71," means that with that number of THE JOURNAL, his subscription expires. Should any one fail to receive his copy, it will be re-mailed upon notice given to this office.

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DR. BURROWES.

Our readers have no doubt missed the contributions expected from Dr. Burrowes, in the January number of the JOURNAL, and they will find nothing from his pen in the present number. The reason is, that he has been seriously ill for nearly two months, and unable to write. Within a few days, we have learned that he is better, and that good hopes are entertained of his recovery. His many friends among teachers and school men throughout the State, will rejoice with us at the prospect of his restoration to health and usefulness. If well enough, he will no doubt contribute something for the March number.

CONCERNING THE JOURNAL.

IT seems necessary to repeat, that we, the editors, are not responsible for the sentiments of our various correspondents. With certain limitations, previously announced, we will allow all sides of educational questions to be discussed in our columns. For example, our experience and observation lead us to differ in opinion, on the question he presents, with the active and earnest superintendent, now in office, who communicates the article in this number on "Visiting Schools;" but we are glad to give him a hearing, and we will also publish a reply to it, if one is sent to us backed by an authorship equally responsible.

WE want communications for the JOURNAL—communications on all the live educational questions of the day. We prefer such as are short, crisp, pointed and practical; but we would also be glad to publish in every number one or more articles expounding the great principles that form the basis of our educational philosophy.

We want suggestions. Let teachers, directors and citizens write to us freely, giving their views as to the working of our system of schools and making suggestions as to the best way of improving it. Valuable thoughts concerning education are floating around in every neighborhood. Who will gather them up and send them to us? We would like to make the JOURNAL rich with the thoughts of the people.

We want facts. The schools are alive. Events in the educational work are constantly occurring. Shower them in upon us from all parts of the State. We will place them on a candle-stick that all the world may see and profit by them.

The JOURNAL is a Pennsylvania magazine, and we intend to give every chance within our power to Pennsylvania teachers and educational men to present through it their opinions. *It shall be their organ.* They can use it almost at will to counsel one another, and as an instrumentality to move onward the great cause in which they are engaged. Let all such remember that its poverty will be their poverty, and its power their power.

IT is our intention soon to sum up our subscribers and see what counties have the most in proportion to the number of their schools. The race for the year is not yet quite fully run. Meantime, we take great pleasure in acknowledging the receipt of lists, some of them very generous ones, from Messrs. R. K. Buehrle of Allentown, Jas. A. Lowry of Jefferson, I. N. White of Brady's Bend, Saml. Murphy of Armstrong, C. C. Taylor, of Erie, W. P. De Walt of Westmoreland, George W. Lloyd of Juniata, John B. Welsh of York, Lewis B. Kerr of Perry, John B. Holland of Blair, E. J. Young of Lehigh, D. B. Brunner of Berks, John T. Reed of Lycoming, R. M. Magee of Centre, D. F. Tussey of Huntingdon, R. A. Lyttle of Catasauqua, Lehigh, J. P. Rowland of Lehighton, Carbon, S. A. Espy of Connellsville, Fayette, N. N. McCullough of California, Washing-

ton, T. J. Teal of Greene, W. L. Balentine of Tremont, Schuylkill, L. O. Foose of Harrisburg, G. W. Phillippi of Johnstown, Rufus Lucore of Elk, A. T. Douthett of Allegheny, C. G. Barkley of Columbia, Saul Shipman of Northumberland, N. W. Porter of Mercer, R. P. McKinney of Chester, S. Kneibler of Montour, and others. The only return we can make our friends is to give them our thanks, to promise to stand by them to the best of our ability and to make our magazine worthy of their encouragement.

OUR SOLDIERS' ORPHANS' SCHOOLS.

WE have received the Annual Report of Col. George F. McFarland, Superintendent of Soldiers' Orphans' Schools, and gather from it some interesting statistics.

There were on the 31st of May last in the different Schools and Homes provided by the State 3,530 orphans. Of these, 2,137 were in what is called Advanced Schools; 794 in Primary Schools, and 599 in the several Homes. The largest number at any one place was 226, at the Northern Home, Philadelphia. There were 217 at Chester Springs, Chester county; 215 at McAlisterville, Juniata county, and 209 at Mount Joy, Lancaster county. No other institution had more than two hundred. The whole number of institutions receiving soldiers' orphans was 44, located in all parts of the State. There were at the date of the report, 622 applications on file at the Department awaiting assignment, but we are happy to learn from private sources, that since that time, a large proportion of these have been assigned to one or other of the Schools or Homes provided for them.

The following figures show, in the language of the Superintendent, "the *maximum* number of orphans that will ever be in our schools was reached and passed during the year 1870." The number of children in charge of the State at the close of 1865, was, 1,226; at the close of 1866, 2,681; at the close of 1867, 3,180; at the close of 1868, 3,431; at the close of 1869, 3,631, and at the colse of 1870, 3,530. The largest number, therefore, that can ever be in the schools is 3,631, the number for 1869, that for 1870 having fallen off 101. The falling off, hereafter, must be still more rapid.

The cost of the system for the year appears in the following statement:

For education and maintenance of children in advanced schools, at $140 per annum, (act 16th April, 1869, and 31st March, 1870)	$283,900.67
For education and maintenance, including clothing of children in primary schools, at $125 per annum, (same acts)	101,475.58
For education and maintenance, including clothing, of children in homes, &c., at $105 per annum, (same acts)	65,266.42
Total expenditures for education and maintenance, *paid by warrant on State Treasurer*	450,642.67
For partial relief, 13 children, at $30	390.00
For clothing children in advanced schools and furnishing 400 discharge outfits	53,993.75
For general expenses	9,100.00
	514,126.42
Appropriations	494,700.00
Balance since June 1, 1870	19,426.42

Pennsylvania has now expended in the education and maintenance of the orphans left her by the war, nearly $3,000,000, and the superintendent is fully justified in saying that "every draft upon her treasury in behalf of these children has been honored." Fourteen hundred and fifty-six children, after having received from one to six years of care and instruction, have left the schools, three thousand five hundred are now in them, and it is thought likely that there will be about one thousand more to be admitted, making an aggregate of *six thousand* soldiers' orphans, cared for by the State and sent out "to honor her name, and add to her prosperity and wealth." All the other States put together have scarcely done as much!

In regard to the educational advantages of the soldiers' orphans cared for by the State, Rev. C. Cornforth, Inspector and Examiner, says in his report:

"The superior educational advantages enjoyed by the children in the institutions of the State are acknowledged by all. The school rooms are generally spacious and comfortable, and many of them are elegantly furnished with modern school furniture, wall maps, globes, etc. Competent and experienced teachers are permanently employed; the prescribed course of study is well chosen and zealously pursued. Strict attention is given to grading and classification, and good discipline is secured by appeals, in the main, to the reason and judgment, or by depriving the offender of some privilege. The harsher methods of punishment are resorted to only when milder measures have failed.

"While special care is taken to have the pupils well grounded in reading, spelling, writing and arithmetic, other branches are not neglected. Geography, map drawing, grammar, book-keeping, physiology, and algebra, are as thoroughly taught, so far as pursued, as in the best schools of the State.

"Instruction in vocal music is given in every institution, but not with uniform ability and skill. In too many schools the children merely learn to sing a few selected pieces, while in others, by rigid and systematic instruction, great and lasting good is conferred.

"The annual examinations at the close of the school year showed that there had been much hard work, on the part of both pupils and teachers. Distinguished edu-

cators, and men of influence in the locality of the several schools, who were present, expressed not only gratification, but surprise at the proficiency exhibited.

"A few years of culture, when the mind is in its most receptive and plastic state, often give direction to the whole of after existence. There are reasons to hope that the career of great numbers who were made orphans by the war will be far different and nobler, for the help extended them by the State. Even the character of the Commonwealth itself must be elevated when the influence of the thousands of children she has nurtured is felt upon society. These reflections, infinitely more than the fact that the widows' burdens are lightened and the orphans' wants are supplied, give importance and grandeur to the soldiers' orphans' schools of Pennsylvania, and stamp them as the latest and best fruits of a Christian civilization."

Mrs. Elizabeth Hutter, Lady Inspector and Examiner, thus speaks of the moral and religious training of the children:

"The principals, as a rule, being faithful and competent men, supported by teachers of a like character, the children, as we might expect, in their moral, social and religious development, exhibit a marked and steady progress. Many of them came to us from the most inauspicious associations, and hence greatly needed to pass through a *refining* process. It may well be supposed that their moral elevation has not been an easy task. Through the unremitting efforts of the principals, however, and their efficient helpers, they have been raised to a far higher standard of moral excellence. Both boys and girls habitually demean themselves with propriety. They are affable in their manners, obedient to their teachers, and respectful to their seniors. They are diligent in the prosecution of whatever duties are imposed on them and are laudably ambitious to excel. They attend Sunday-school, held either in the school building or in some proximate church, and attend, also, Divine worship—the object being, not to indoctrinate them with sectarianism, but to instruct them in those leading fundamental truths of the Christian religion, which its professors, of every name, admit to be essential both in belief and practice. They are thus made, in the most impressible years of life, to realise, that they are not alone expected to lead virtuous, honorable and useful lives in *this* world, but that they are hastening to a world of retribution, which lies beyond this, where they will severally have to render an account of the deeds done in the body."

The Superintendent himself, gives some very gratifying facts concerning the industrial instruction imparted at the schools. He says:

"Continuing to believe not only that it is right and wise to educate these children industrially, but that it can be done in these schools, even to the teaching of trades, if facilities for doing so were afforded, the subject has received constant attention during the past year. The results show themselves in the girls' department in increased neatness, cleanliness and despatch in doing the work of the laundry, kitchen and house generally, indicating commendable skill in housekeeping, sewing, etc., and in larger and better crops from the farm and garden, improved stock, increased efficiency at labor of whatever kind engaged in on the part of the boys. The influence of this labor is also seen in the physical development, educational progress and improved habits and manners of both sexes.

"The facilities for learning trades are improving, though not as rapidly as desirable. The Lincoln Institution in Philadelphia continues, successfully, its efforts in this direction, increasing the number of boys at trades. Titusville continues to teach printing in the office of the *Long Roll*. Uniontown has added a shoe shop and a broom factory. Mansfield makes brick with modern machinery. M'Alisterville raised a large quantity of broom corn and is preparing for the manufacture of brooms with improved machinery. All the schools and some of the homes have introduced more system, with increased facilities in teaching farming and gardening.

"There is still a lack of facilities, however, that could and would have been supplied but for disturbing causes it was not in the power of this Department to remove. Both the necessity and practicability of furnishing thorough and systematic industrial instruction to both sexes, and of teaching well, as far as age permits, a number of trades in these schools, has been demonstrated beyond a question. The failure to do so results alone from want of facilities, that could in most cases be secured without cost to the State."

These orphan children are the wards of the State; let them by all means be well cared for. Their fathers protected the State, the State in turn should protect the children.

STANDARD TIME.

ALLEGHENY OBSERVATORY.

Under the directorship of Prof. S. P. Langley, the Allegheny Observatory of the Western University has done some excellent work, and arrangements are now making which will still further enhance its usefulness, not only in regard to scientific results, but in its relation to practical affairs.

In the problem of successful railroad management much depends upon the accurate running of the trains, and as that must be done "on time," anything which will bring into common use a more generally exact standard of time, will be valuable to our railroads, and beneficial to the public at large. Accidents, because station clocks and employees' watches have differed, are known to have occurred, and though the general practice of controlling the movements of the trains by telegraph from a central office by "train dispatchers" has done much in removing the chances for such accidents, there is still room for improvement in this respect. In view of this fact negotiations are pending with the Allegheny Observatory for introducing a more accurate method of securing standard time, such as the English railroads have enjoyed in connection with Greenwich Observatory. To accomplish this result, some additional apparatus and appliances have been provided for the Observatory.

Among the articles recently procured are a mean-time clock made by Messrs. E. Howard & Co., of Boston, and the finest, it is said, in this country; a sidereal astronomical clock made by Frodsham, of London; and a transit instrument made also in London by Troughton & Sims.

In securing this new apparatus for this work, the Observatory has been at much expense, only a part of which has been returned to it. McFadden & Co., of Pittsburgh, have, however, been liberal in their encouragement of the enterprise. At their store, as well as at those of Meyran & Siedel, and Stevenson & Co., of Pittsburgh, and of Mr. Klages, of Allegheny, the time signal bells are already in position. They were tested for the first time a short time since to the entire satisfaction of all who witnessed the experiment. A number of banks and other estab

lishments are preparing to make connection with this universal time regulator. But, as has been stated, this is not intended for a mere local institution, but is ultimately designed to make Pittsburgh time the standard upon the railroads for hundreds of miles in every direction from here. No like scheme of such magnitude has ever been projected in this country, and if it shall succeed Pittsburgh will claim the credit of being pioneer.

LIFE AMONG THE SCHOOLS.

FEMALE PRINCIPALS OF HIGH SCHOOLS.

We know of but two high schools in the State admitting pupils of both sexes, that have female principals; one at Lewistown, Mifflin county, and the other at West Chester, Chester county. Miss Mary McCord is the Principal of the school at Lewistown, and Miss Sarah W. Starkweather of that at West Chester. Both of these ladies have occupied their present position for several years, and both of them have been very successful in giving satisfaction to boards of directors and patrons.

Miss Starkweather, in addition to her duties as principal of the high school, exercises a supervision over the other schools of the borough, and in the capacity of Superintendent, has just published her annual report. From this report it appears that 1104 children were enrolled during the past year, that the average number was 716, and the average attendance 85 per cent. Miss Starkweather says:

"The High School occupies a prominent place as the culmination of the common-school system, and the department in which should be found its perfected fruits. The standard of scholarship should be high, and citizens who appreciate its advantages should desire their children to complete the course. Studies are pursued which are thought to furnish the best preparation for an effective and intelligent use of all the faculties, and they have been selected according to the usual requirements of such institutions, though more particularly with reference to the necessities of this community and our own scholars.

"Examinations are thorough, but not so rigorous as to exclude any diligent pupil of ordinary ability. But nineteen scholars have as yet received diplomas. Of this number, twelve applied to the County Superintendent for examination, and received teachers' certificates. Four entered higher institutions with credit to themselves. Two classes were united to form the last graduating class, so that diplomas will not be again bestowed until June, 1872."

Schools of Allegheny City.—The sixteenth annual report of the Board of Controllers of the Public Schools of the City of Allegheny, recently published, shows that the number of teachers employed is 131; the average salaries of male teachers is $1,274, and of female $432; the whole number of pupils enrolled is 9,961, and the average number 5,335; the amount of tax levied is $122,384; and the amount expended for school houses is $75,315.

The Committee on School Inspection recommends three things: first, the election of a city superintendent; second, the employment of more experienced teachers in the primary schools; and, third, the establishment of a high school.

The Committee on Special Instruction speaks very favorably of the practice of employing special teachers to give instruction in penmanship, drawing and vocal music. They allege that in a general way pupils instructed by special teachers, skilled in these branches, make better progress than when instructed by their ordinary teachers. This conclusion should attract attention in other places.

The Board of Control provides for the instruction of eleven deaf mutes in the institution established for the free instruction of this class of pupils by the public school authorities of Pittsburgh.

The records show a visitation for the year as follows: Parents and others 1,218 visits; directors 1,867 visits; County Superintendent 180 visits.

Allegheny has some of the finest school buildings in the State, and has just entered into a contract for the erection of another one at a cost of $70,000.

The District Superintendency.—Is Mahanoy Ahead?—In the December number of the Journal commendatory notice was taken of the fact that Mahanoy district, Schuylkill county, had employed a good, practical teacher, not a member of the board, as District Superintendent, and allowed him a salary of $75 per month. This was then thought to be the first instance of the kind in the State, and Mahanoy was honored accordingly.

Soon after the apperance of this notice, a note was received from the county of Erie, in which the honor of being the first district to employ a practical teacher as District Superintendent is claimed for Mill Creek district, in that county. The note states that the directors of Mill Creek district appointed an active teacher district Superintendent and opened her schools under his supervision on the 12th of September last. The District Superintendent devotes his whole time to the schools of the district, presides at the district institute, and reports monthly to the County Superintendent.

Upon inquiry, we now find that the district superintendency in Mahanoy district was

established June 11th, 1870, but not put in operation until September 12th, the very day it went into operation in Mill Creek, on account of not being able to find a suitable person to fill the office.

But it further appears that neither Mahanoy nor Mill Creek is entitled to receive the first honor in initiating this advanced movement. It seems that Union district, Schuylkill county, adopted and put in operation the district superintendency, in the form now referred to, *September 27th*, 1869. During the present term of their schools, Union and North Union, adjoining districts, have united in electing a successful teacher as District Superintendent. He is required to visit all the schools of both districts twice a month, and report monthly to the respective boards and to the County Superintendent.

Let Union, Mahanoy and Mill Creek all have equal honor, since each district acted of its own motion and without a knowledge of what had been done by the others. All are pioneers in a good work. We shall watch this movement with much interest, for we believe that it is in the right direction, and the good example of the districts named will soon be followed by many others. A system must be strong *that grows spontaneously*. All true educational development, whether in systems or in individuals, is endogenous.

Agricultural College.—This institution will re-open on Friday, February 10th, for the Spring Session of 1871—a session of twenty-four weeks in length. For general circular, catalogue and other information, address Dr. Tho. H. Burrowes, Agricultural College, P. O., Centre county, Pa. The annual catalogue, which lies before us, is an interesting document, giving a full description of the institution, its course of study, and the special advantages which its liberal endowment enables it to afford the pupil. Parents, whether farmers, merchants, or professional men, who are looking about for a school to which to send their sons, should see this catalogue, and then visit the College for themselves. The roll, last year, shows upward of sixty students in attendance; that of next year, with the advantages afforded the pupil more generally appreciated, should be at least three times this number.

The New High School at York.—The York *True Democrat* under the caption "Our High School," says:

"Our people are beginning to see and feel the great benefits resulting from our York High School. It is looked upon as a measure of reform in the interest of every class of people. Rich and poor are equally benefitted. It has improved the primary schools. It is a measure of retrenchment and economy, because it cheapens education to the masses. Only the selfish few object to the expense of $2,500 a year for its support. Twelve thousand people can afford each twenty-five cents a year, if the necessary amount could not be raised by taxes. But as the school law exists, of taxing property, we favor that way for the present of raising the amount. It is a fundamental principle of the *True Democrat* to advocate the educational interests of the American people, believing an intelligent use of the franchise in a republic essential to its perpetuity, safety, and economical administration. Selfish, bad men will always mislead an ignorant and uneducated people. And further, we believe the highest state of happiness and Christian civilization results from the cultivation of the noblest faculties of man—the intellectual, moral and perceptive faculties controlling the social and selfish instincts of his nature. Nothing can contribute so much to this result as good schools. The poor and neglected need these opportunities more than any other class, just from the very fact that the parents of many of these children, for want of such education, especially, need the assistance of good schools and teachers to develop the nobler powers of, perhaps, the greatest minds in the community, in their children. We owe it to the children, the people, the State and the Nation, to furnish liberal means for their thorough education. Narrow-souled selfishness, shut in, like the turtle in his shell, seldom sees any good but that which profits self, and only self. Such people believe every person's motives selfish, like their own. We can only pity them, understanding their infirmities. Let us encourage the High School, the directors, teachers, and scholars, in their good work of making our High School a model of usefulness."

A public examination of the pupils in this school was held Dec. 21st, 22d, and 23d, and all present agree in stating that they acquitted themselves in a very handsome manner, thus doing credit to the teachers who manage the school, and the board that established it.

The Mifflinburg Schools.—The Mifflinburg, Snyder county, *Telegraph* of December 22d, thus compliments the public schools of that place and those who manage them: "The Free Schools of Mifflinburg are doubtless the best public schools in Union county. The closing exercises of the first term occurred on Wednesday, Thursday and Friday of last week, and exhibited a degree of interest in the success of our schools, on the part of the public, most gratifying to every friend of education. This newly awakened interest has been brought about by the present Board of Directors extending the school term to eight months, adopting a system of grades and placing the whole under the charge of a competent instructor, Prof. A. S. Burrows, of the Bloomsburg Normal School, under whose supervision such satisfactory results have already been attained."

The Erie High School.—An Erie paper thus speaks of the closing exercises of the High School of that city: "The closing ex-

ercises of the Central High School were very creditable to all the performers, complimentary to the teachers under whose careful and skilful tuition the proficiency has been attained, and interesting to the large and appreciative audience, who showed their care for the school by their presence. There were orations, essays, declamations and recitations, varied with instrumental music of the finest character, and choral singing. Of course no special references can be made where *all* did so excellently. A few short speeches closed the entertaining 'last day.'"

The pupils of the Lebanon Female High School, under the direction of their teacher, Miss Sue Richardson, recently gave very interesting and creditable entertainments in the Court House. The proceeds were expended in the purchase of a fine melodeon for the school.

Still Another Normal School Project.—At the meeting of the Indiana county Teachers' Institute, recently held, a committee was appointed to prepare an address in behalf of the establishment of a State Normal School for the Ninth Normal School District, comprised of the counties of Cambria, Indiana, Armstrong and Westmoreland.

The address prepared by this committee has just been published in the Indiana papers. We extract the following paragraph, which shows its general purport: "It is proposed to establish this school in Indiana county. The committee appointed at the last County Institute to bring the subject more especially before the friends of education in this county, think the school should be in Indiana county, because it is the most central location, and can be readily reached by easy and cheap means of travel. We have in this Normal District at present over 800 common schools, all of which should be filled with well qualified teachers. In order to have them as well qualified as they should be, means for their improvement must be provided accessible to all, and only requiring such remuneration for board, tuition, and other necessary expenses as the limited salaries of the teachers will enable them to pay. It is thought the best, and perhaps the only means of doing this is to establish a Normal School in the district so that teachers may enjoy the advantages contemplated by the School Laws of Pennsylvania."

Subsequently, a meeting of citizens of the borough of Indiana and vicinity was held at the office of the County Superintendent, Mr. Gibson, and a committee was appointed to solicit subscriptions. When we state that such public spirited gentlemen as A. L. M'Cluskey, Esq., Silas M. Clark, Esq., A. W. Wilson, Esq., Judge Sutton, Senator White and Dr. St. Clair are taking a deep interest in the matter, the public may know what to expect. A *whisper* even has reached us that several gentlemen are ready to subscribe $5,000 apiece.

Since writing the above we learn that the handsome sum of $35,200 has already been subscribed, and that the good work still goes briskly forward.

Mahanoy City.—As a specimen of the kind of work going on in many towns throughout the State, we take pleasure in making an extract from a letter just received from Mahanoy City, Schuylkill county. "This young and flourishing borough," says the writer, "is fully up to the times in school affairs. About 1,200 pupils have been enrolled the present term. The Board of Directors has procured the standard professional works for the use of teachers, besides apparatus, charts, maps, etc. About one hundred volumes have been purchased in various ways, for the use of scholars and teachers, and form the nucleus of a district library. A flourishing High School, under the charge of Mr. T. H. B. Lynn, affords advantages to young ladies and gentlemen, to be had formerly only at academies and colleges."

It should, in justice be added, that Mr. Eli S. Reinhold is Borough Superintendent and that to him is owing much of the life that is manifested in the schools.

Superintendet Magee of Centre, in sending us a list of subscribers for the Journal, writes, "We would like you to visit us in order that we might give you an idea of what we are doing up here in 'Old Centre.' We do not work upon the 'sensational' plan, but think ourselves considerably ahead of many of our sister counties. The most improved methods of teaching are generally adopted. More than two-thirds of our teachers have attended the County Normal School. All have studied the 'Theory of Teaching,' (otherwise, none were licensed,) and a large majority are well versed in Wickersham's 'Economy' and 'Methods.' Mental science, as taught for the past two years in our 'Normal Institute,' is becoming a leading study with our teachers. All this is telling favorably upon the character of our schools, but our school terms are too short and our teachers' salaries too low to enable us to accomplish all that is desirable. Still, our motto is 'ever onward.'"

We take this method of informing our friend that we are not unmindful of the good work, of which he is the leading spirit, going on in "Old Centre."

Good Attendance.—G. M. Bigam, teacher of School No. 7, Sewickly district, Westmoreland county, with 33 names on the roll, had an attendance during the month of December of 94 per cent.

Samuel Wynn, teacher in Charleston district, Chester county, with 58 names on the roll, had an average attendance for the same month of 53.

Both these gentlemen teach in rural districts, and some of their pupils have considerable distances to walk. *With such teachers there would be little need of a law compelling children to attend school.*

Branch Teachers' Institutes—The Superintendents of Chester, Indiana, Lancaster and Warren counties have been holding branch teachers' institutes at various places. Some of them have been largely attended and proven very successful. They are found to awaken a good degree of local interest in the educational cause, and in this respect they are even more beneficial to it than the annual County Institute.

Evening Schools.—Free evening schools have been opened during the winter in Pittsburgh, Harrisburg, Reading, Lancaster, Erie, Norristown and other places. They are said to have plenty of work to do and to be doing it well.

Large Furnishing House.—Messrs. J. A. Bancroft & Co., the well-known Arch street firm, have just completed an extensive addition to the rear of their old store, their buildings now extending through from street to street. This addition will be devoted to School Furniture and the manufacture of school appliances, and will enable them to keep on hand School Desks by the thousand in constant readiness to fill and seat the largest house at a few days' notice. They have also been enlarging their main building, as their increasing trade demanded, and their accommodations are now such as to afford the people of Pennsylvania the largest and most complete school-furnishing house in the United States, to which they invite every Teacher, Director and other officer of the Commonwealth, feeling assured that no one will regret the hour spent in their establishment.

Personal.

Superintendent Wert, of Adams county, was presented by his teachers at the recent Institute with an elegant silver cake basket. His lady received at the same time a silver card-receiver, and his little son, Master Howard Houck Wert, a pair of silver goblets. The presentation speech was made by Capt. M'Creary, the acting President of the Institute, and it was appropriately responded to by Mr. Wert on behalf of himself and family.

J. R. Durborrow, Esq., late editor of the *Bedford Inquirer*, has purchased the Huntingdon *Journal and American*, and the Huntingdon *Republican*. Both papers will be combined, and published under the name of the *Huntingdon Journal*. In the first number of the paper issued under his editorship, Mr. Durborrow prints a pointed article on the "Teachers' Institute," and promises to get back to the subject again, and "say some things that will waken up old fogies, and put some additional vim into school men." He is just the man to do it.

We thought we were promised an article for this number of the Journal by our friend W. W. Woodruff, but while watching every mail for it, the following notice caught our eye in a Chester county newspaper. "*Gone!*" said we, a little despairingly as we laid down the paper, and took up our pen to supply in our own poor way the expected article. That task performed, we are in the humor to wish in full measure all life's pleasures to the happy pair.

Married.—Monday, December 26th, 1870, at the residence of the bride's mother, near West Grove, W. W. Woodruff, late County Superintendent of the public schools of Chester county, to Miss Alice Jackson, daughter of the late William Jackson.

Superintendent R. K. Buehrle, of Allentown, received from the teachers of that city, a handsome silver set as a New Year's present.

At the close of a literary entertainment recently given by the pupils of the Fifth Ward Public School of the city of Pittsburgh, William M. Glaney, a member of the Board of Directors, in behalf of the teachers, presented to the Principal of the school, Mr. John M. Conroy, and his lady, a handsome set of statuary, representing the "seasons" and "Night" and "Morning," and also a toilet set. "No present," says the Pittsburgh *Commercial*, "could be more deserved, as the school is now

in a very flourishing condition, made so by the earnest efforts of the efficient Principal." Mr. Conroy formerly taught in Lancaster county.

THE TEACHERS of the public schools of the borough of Carlisle, through Messrs. Gring and Ziegler, recently presented Jason W. Eby, the worthy treasurer of the School Board, with an elegant gold pen and silver holder. The gift was tendered Mr. Eby in consideration of the many favors extended by him to the teachers, and also as a reward for the able manner in which he has so long filled his present responsible position. The gift was very unexpected, and the recipient returned thanks for the handsome testimonial.

BAYARD TAYLOR lectured recently at several Teachers' Institutes in Chester county.

THE LOOKOUT ABROAD.

WOMEN TO THE FRONT.—Returns from London show that at the recent election held for the purpose of choosing school directors under the new school law of England, Miss Garrett was elected to represent the Marylebone district in the board, by a vote of 47,000, and Miss Davis, also by a large vote, that of Greenwich. Prof. Huxley was elected at the same time, and Tom Hughes was a candidate, and is believed to have been elected.

Ladies have lately been admitted as students at the University of Vienna, and likewise at that of Prague.

In this kind of progress the Old World seems to be ahead of the New. Michigan University, however, has fifteen ladies in the literary department, thirteen in the medical, and one in the law.

THE NATIONAL COMMISSIONER OF EDUCATION, in his report, states that the total income and expenditure for public school purposes, for 30 States (not including Alabama, Georgia, Mississippi, Oregon, South Carolina, Tennessee, Texas, and Virginia), are nearly $61,000,000. Twenty-two States have 5,695,916 children enrolled in the schools, but the average attendance is only 3,377,069. At the same time there is a total average absence in these 22 States from the public schools of the enormous number of 4,843,568 children of school age. The Commissioner also presents the following table, showing the—

SCHOOL EXPENDITURE PER HEAD OF THE SCHOOL POPULATION.

Nevada	$19.17	Wisconsin	$4.98
Massachusetts	16.45	Maine	4.78
California	11.44	Maryland	4.50
Connecticut	10.29	New Hampshire	4.46
Pennsylvania	7.86	Arkansas	3.97
Illinois	7.83	Louisiana	2.84
Iowa	7.21	Delaware	2.70
New York	6.83	Missouri	2.65
Vermont	6.49	Nebraska	2.65
Kansas	6.45	Indiana	2.37
Ohio	6.48	Alabama	1.49
Michigan	6.40	Tennessee	91
New Jersey	6.38	Florida	91
Rhode Island	6.20	Kentucky	73
Minnesota	5.81	North Carolina	42

ENGLAND lately experienced a sensation somewhat similar to that of Cincinnati over the Bible in the public schools question. The educational elections were the cause. The following address, as printed in the London papers, was issued by Mr. Hepworth Dixon, a candidate for membership in the Metropolitan School Board:

"RATE-PAYERS OF THE MARYLEBONE DIVISION: School or jail? Shall every child among us have the means of growing up a reading, reasoning man? A great provision has been made; the means are ready; you have now to choose the method and the men. What is your method? As one, who has travelled far, and written much in illustration of the sacred book, I am in favor of Bible reading in our schools, while in due regard for conscience and for Scripture, I would never force that reading on those who do not want it. I would pay that measure of respect of my neighbor's views which I would like him to show toward mine. In the men you choose you have a right to expect some sympathy with the poor, some knowledge of books and systems, some experience of the countries in which primary education is the rule. You must have your work done well. The act is a good act, and the power which it confers is great, and every power should be employed to secure the good results for which it has been framed. If you conceive that my presence at the board is for your service, I am in your hands."

A NATIONAL UNIVERSITY.—The establishment of a National University was a favorite idea of Washington's and of others among the early statesmen of the republic, but for many years little or nothing has been said upon the subject. It now appears, however, that the project is to be revived. A recent despatch from Washington states that Senator Howe of Wisconsin, will, at an early day, introduce a bill to establish a free National University in the District of Columbia. The various public establishments existing in Washington point to the Capital as the most appropriate location for such an institution, and Mr. Howe's practical common sense and long familiarity with the subject of education well qualify him for carrying the movement to a successful issue. His plan, we understand, differs widely from any

heretofore proposed, and points to the combination of advantages to be obtained from the Patent Office, the Congressional Library, the Smithsonian Institute, the National Observatory, the Medical Museum, the Coast Survey, the Museum of Records of the War and National Portraits, &c., &c.

THE WISCONSIN JOURNAL OF EDUCATION has been revived and presents in its neat, new dress a very creditable appearance. Neither is its merit all on the outside. It is filled with good matter. We especially like the spirit of the following from the editor's salutatory: "The *Journal* is to be the 'Wisconsin Teachers' Journal.' It is to contain their best thoughts, and illustrations of their best methods of instruction. Hence our pages are open to their contributions. We shall depend mainly upon 'home talent,' for we fully believe we have sufficient intellectual ability in our midst to make a journal second to none in point of literary merit." Victory is certain, we think, "fighting ing it out on that line."

In its "notes," the *Journal* speaks thus of our State: "Pennsylvania, under her compact and vigorous system, is moving steadily without noise. She has never been troubled with the single district system; has taken no backward step; has about half of her magnificent system of twelve Normal schools already in operation, and altogether her example is one to be commended and followed."

THE CONNECTICUT SCHOOL JOURNAL.—The Connecticut *Common-School Journal* was established by Dr. Henry Barnard in 1838. With two or three breaks in the succession, twenty-two volumes were published, but for some time Connecticut has had no educational journal. This want is now supplied by the late action of the State Teachers' Association, and Vol. I., No. 1, of the Third Series, comes to us neat in appearance, excellent in paper and typography, and full of live matter, well arranged. The reasons the editor gives for resuming the publication of the *Journal* are, that no educational monthly is read to any extent in the State, and that the revived work of education, the growing interest in regard to the quality of the schools, and the demand among school officers and thinking men for information on *what kind of education* will best favor the industries of the State, render such a publication desirable. We think these reasons abundantly sufficient, and are glad to see the *Journal* enter as a reaper into a field promising so rich a harvest.

OFFICIAL DEPARTMENT.

PERMANENT CERTIFICATES GRANTED.

NO.	NAMES.	RESIDENCE.
688	Miss A. M. Smith	Catasauqua, Lehigh Co.
689	Miss K. M. V. Smith	" " "
690	Miss A. M. Watson	Williamsport, Lycoming "
691	Wm. J. Burke	Ashland, Schuylkill "
692	Mrs. Susan C. Walker	Franklin, Venango "
693	Miss H. A. Keatley	Oil City, " "
694	R. P. Bowman	Cooperstown, " "
695	Miss M. M. Bulloek	E. Charlest'n, Lycoming "
696	Miss R. E. Terrel	Honesdale, Wayne "
697	Leroy R. Fowler	" " "
698	Miss Bell Martin	Yohogany, Westmorel'd "
699	D. B. Bailey	Dillsburg, York "
700	Miss Maggie Fish	York " "
701	Miss Rebecca Craven	" " "
702	Miss Kate Eichelberger	" " "
703	Miss Sadie Lyle	Allegheny City, Allgh'y "
704	Miss N. A. Thompson	Waterford, Erie "
705	Edmund Cressman	Bath, Northampton "
706	Miss Mary Bowden	Tamaqua, Schuylkill "
707	Miss Emma Vaughn	" " "
708	Miss Lyde J. Churns	Bradensville, Westm'd "
709	Miss Mary A. Churns	" " "
710	G. T. McCord	Sharpsburg, Washingt'n "
711	J. P. Taylor	Monongahela City, " "
712	Philip D. Baker	Dillsburg, York "
713	William Emenheiser	Hellam, " "

TO COUNTY, CITY AND BOROUGH SUPERINTENDENTS.

THE boxes containing school documents were forwarded to the different superintendents early in January. They contain the proper quota of school reports, a sufficient number of school laws to supply each director with a copy, and such other blanks as are generally used by school officers.

Those superintendents who have not yet acknowledged to this Department the receipt of these documents, should do so *at once*. If any expense was incurred to them in the shipping, they should state how much, and whether settled for by the agent who shipped the boxes.

APPOINTMENT OF COUNTY SUPERINTENDENT.

JAMES L. PUGH, of Somerset, was appointed Superintendent of Somerset county, to fill the vacancy caused by the resignation of William H. Sanner, now a member of the Legislature.

OFFICE FOR COUNTY SUPERINTENDENT.

The Commissioners of Bradford county have granted the County Superintendent the use of an office in Towanda, the county seat, which will in the future be his post-office address.

QUESTIONS AND ANSWERS.

Ques.—What constitutes a school?

Ans.—In a popular sense a school is a body of teachers and pupils, that occupies one building. In this sense, a body consisting of a single teacher and a dozen pupils is a school, the same as is a body of twenty teachers and a thousand pupils. But this Department uses the word school in a different sense, viz.: to designate *a body composed of one teacher and the number of pupils of whom he has charge.* In making up their reports, therefore, boards of directors should give as the number of their schools, *the number of permanent teachers' positions they have had filled.* Otherwise, a township with 300 pupils may report more schools, since its school houses are small, than a city with 3000 pupils, since its school houses may be large.

Ques.—We had two terms of school the past year, one in the summer and one in the winter, and we had different teachers in some of our schools for the winter term from those we had for the summer term; shall we report all the teachers we had employed, or not?

Ans.—You should report all the teachers you had employed. In that case, of course, you would report more teachers than schools, but that makes no difference. What is wanted is the whole number of teachers.

EXAMINATIONS AT THE CLOSE OF THE TERM.

Boards of directors are earnestly requested to pass a resolution, requiring all the teachers in their respective districts to hold public examinations near the close of the term, and to appoint committees, both of their own number and of citizens living near the schools, to attend the same.

Such examinations, when well conducted, are attended with several good results. Among them the following:

1. They enable directors and citizens to judge as to the manner in which the schools have been managed and taught.

2. They enable teachers to exhibit the character of their work and when well done to get proper credit for it.

3. Prospectively they stimulate pupils to make greater efforts in their studies.

4. They tend to beget new interest in the schools and in education generally.

Of course, the kind of examinations meant here are those which consist in a careful review of the branches of learning pursued in the schools. The recital of a few committed answers to questions is not an examination.

In connection with the review, there can be no objection to a little music, or a moderate amount of dialogue or declamation. Short addresses from directors, teachers or citizens would be quite in place.

Let the experiment be tried on a large scale. What county will hold the most examinations in proportion to its schools? Will not directors and superintendents move in the matter at once?

Circulars to Teachers.—Jesse Newlin, Esq., Superintendent of Schuylkill county, prepared the following circular, and has placed a copy in the hands of every teacher in the county. The circular is published here, as a model for other superintendents who may wish to gather similar statistics:

SCHUYLKILL COUNTY COMMON SCHOOLS.

Teachers' Report to County Superintendent.

You will please fill up as correctly as you can, this report, and forward it to me at or near the close of your term, as I desire that my next Annual Report to the State Superintendent shall contain a complete statement of the educational standing of the county.

Whole No. Male Scholars enrolled during the term...
Whole No. Female Scholars enrolled during the term..
Average attendance Male Scholars during the term....
Average attendance Female Scholars during the term..
Per cent. of Attendence during the term.....
Number of Visits by Directors.....
Number of visits by Citizens.....
Number of visits by clergymen.....

NUMBER OF PUPILS IN FOLLOWING BRANCHES.

Alphabet.....		Descriptive Geography...	
Orthography.....		Physical Geography,....	
Writing in book.....		Writing on Slate.....	
Reading	1st Reader....	Grammar.....	
	2nd Reader...	History, United States...	
	3rd Reader...	Map Drawing.....	
	4th Reader...	Written Arithmetic.....	
	5th Reader...	Mental Arithmetic.....	
Composition.....		Algebra.....	
Physiology.....		Etymology.....	
Singing.....			

IF ANY OTHER BRANCHES ARE TAUGHT, ADD THEM ON THE OTHER SIDE.

Kind of Text Books used, and the number of each.....
.....

NAME OF TEACHER.

ITEMS FROM LATE REPORTS.

ADAMS.—At the late County Institute, 150 of the 161 teachers employed in the county were present. Of the 27 school districts, the directors of fourteen gave the teachers all the time of the Institute; most of the others gave three days.

ARMSTRONG.—Two school-houses were recently destroyed by fire in Horey district.

BEAVER.—Three independent school districts have been established in the county during the past year, one in each of the following townships: Moon, Ohio and Big Beaver. The first has erected a commodious frame building in which a well-organized school is in progress. The others have their houses under contract. The directors of Pulaski district, during the vacation, substantially repaired their school-houses, and at the same time erected the necessary out-buildings. Many other directors would make progress if they were to imitate this example.

BEDFORD.—Ninety-one teachers are attending district institutes. In several cases a union has been effected between the teachers of graded schools and those teaching in neighboring townships, by which the membership being increased, the sessions are made more interesting.

BLAIR.—Two new school houses have been erected in Taylor district and one in Tyrone; the latter is well proportioned, furnished with patent seats and desks, and is, in all respects, a model country school-house. Of 162 teachers in the county, 133 attended the late county institute.

BRADFORD.—Many of the teachers show a gratifying improvement in their manner of conducting schools. Heretofore, teachers have neglected, to a great extent, to classify their pupils properly, allowing them to study and recite at random and separately, and, in some instances, they have neglected black-board exercises for weeks together. These teachers have been told plainly that such neglect rendered them unworthy of their calling.

BUTLER.—Concord and Cherry have each erected a new school-house; they are of good size, neat in appearance and pleasantly situated.

CAMBRIA.— Millville School district has completed a large brick school-house, containing eight rooms, at a cost of $28,000. The school property of this district is now worth about $45,000. The late Institute was the best ever held in the county.

CAMERON,—Lumber employs three female teachers, continuing each in the same school throughout the year, and paying according to qualifications and labor performed. Excellent satisfaction having been rendered by these teachers, their wages have been advanced, and now average $41 per month. The houses at Smith's Run and Rancey, in Gibson, have been supplied with new and suitable desks and seats. The school-room in Enterprise (Independent) has been supplied with Bancroft's new patent Gothic desks. The school-room at Beechwood has been thoroughly repaired, and supplied with necessary furniture.

CARBON.—Mauch Chunk has opened four evening schools for the benefit of those children who are employed about the mines and cannot attend the day schools. The directors deserve much credit for this wise action.

CENTRE.—The late Institute was quite successful; the effect will be good on teachers, schools, and on public opinion. The work done was effective and thorough, and all the members took a deep interest in the proceedings.

CHESTER.—During the past month two Teachers' Institutes were held, one at Waynesburg, the other at Unionville, five days each. The Superintendent was assisted by Dr. Franklin Taylor, Prof. J. B. Roberts, Miss E A. Stetson, Rev. Wm. E. Moore, Prof. John G. Moore, Bayard Taylor, Prof. Wm. Brown, Rev. A. A. Willits, Jacob Harvey, and the teachers and the clergymen of the vicinity. These Institutes were attended by 1000 persons including 79 teachers and 40 directors.

CLARION.—At the public examinations of teachers, in many instances from fifty to one hundred spectators were in attendance. The county Institute was a success. One hundred and ten teachers were in attendance. Supt. Jones, of Erie City; Supt. Dale, of Venango; and Profs. Cooper and Langlay, of Edinboro' Normal School, rendered valuable assistance. A fine new school house has been built at Greenville, consisting of two departments.

CLINTON.—The Superintendent publishes weekly accounts of his visitations in two county papers. The schools of the county are in excellent working order. Under the management of Prof. A. N. Raub, the Lock Haven public schools have attained an eminence scarcely anticipated two years ago. Much of this success is due to the able corps of teachers selected by the directors to co-operate with their Superintendent.

ERIE.—The County Institute held in the city of Corry, was the largest assemblage of teachers ever convened in the county. More than three-fourths of the teachers of the county were in daily attendance. From 200 to 300 spectators were present during the daily exercises, and

Christian Chapel, with a capacity of seating eight hundred, was crowded every evening.

ERIE CITY.—There are forty-nine teachers employed, 2,131 pupils in attendance, and an evening school with 205 pupils.

FRANKLIN.—The County Institute was pleasant and profitable. At no period during the administration of the present County Superintendent did he find the schools more successfully conducted than is the case at the present time.

FULTON.—The impression is very general that the last Institute was a complete success. The attendance on the part of the teachers and the public was very good, and the interest manifested by all, highly commendable. Fulton considers herself redeemed for her failure last year.

JUNIATA.—The late County Institute was the most satisfactory educational meeting yet held in the county. All the teachers in the county were present except seven, and some twenty teachers were in attendance from other counties.

LAWRENCE.—Five new schools have been organized in the county. The First and Second Wards of New Castle have each furnished a new room in their buildings. In the First Ward a primary room was opened, making now twelve schools. The Second Ward added a high school room, making now eight schools. Prof. S. A. Hayes is employed to teach penmanship in the New Castle schools.

LEBANON.—Twelve new school buildings have been erected in the county during the past year at an aggregate cost of $42,000. All are beautiful, convenent and substantial.

LYCOMING.—Col. Levi L. Tate, editor of *The Williamsport Sun and Democrat*, has appropriated a column of his paper to educational purposes. During the past month three educational meetings were held; one in Fairfield, one in Clinton and one in Washington. The object of these meetings, and others of like character which will yet be held, is to arrive at a more perfect understanding between parents, directors, teachers and superintendents, and to urge the teachers to qualify themselves more fully for their work, especially in the art of teaching. It is also the object to urge upon the directors and citizens the importance of making a distinction between the salaries of well qualified teachers and those only partially qualified, and thus endeavor to retain in the profession those who who are worthy. These meetings have a salutary effect in arousing an educational enthusiasm in the common-school interests of the county.

MONTOUR.—All the schools open in the county have been visited by the Superintendent.

NORTHAMPTON.—A good two-story brick school house has been completed at Walnutport, in Lehigh district, and another of the same grade at South Easton. The new school house at Bethlehem will be one of the handsomest school edifices in Pennsylvania.

PERRY.—The opening of three schools in the county was delayed, as the directors could not secure teachers for them at from $25.00 to $28.00 per month.

PIKE.—The Delaware Academy has been thoroughly repaired. It belongs to the district and is used for common-school purposes.

VENANGO.—The institute was the largest yet held in the county—170 teachers were in attendance, being about 30 more than at any previous meeting. The teachers made a voluntary contribution of $108 towards defraying expenses.

WARREN.—The county institute resolved to hold a series of special institutes during the winter at different points in the county. Three of these have been decided upon; the first at Columbus, the second at Pittsfield, and the third at Sugar Grove. These and others are each to continue two days.

WASHINGTON.—Since our schools opened, institutes have been held at Buffalo, Canonsburg and Burgettstown. The exercises consisted of vocal and instrumental music; class drills in grammar and spelling; and lectures on school management, penmanship, vocal music, compulsory attendance at school, and various other topics affecting the prosperity of our schools. The attendance was large, and the exercises interesting to pupils, teachers, and parents. An educational interest has been awakened, which will be productive of good results. The Linnean Academy, at Cannonsburg, and the Normal School, at California, are well patronized and doing good work. The office of the County Superintendent is constantly receiving books and apparatus. It now contains Camp's and Pelton's outline maps, a 10-inch globe, school mottoes, arithmetical charts, compass, thermometer, school desks of latest and best kinds, and a hundred or more school-books of various kinds.

WAYNE.—Lewis M. Sears has the honor of being the first District Superintendent appointed in Wayne county, and Texas the honor of making the appointment. There are, at present, four excellent select schools in the county: at Prompton, under charge of Miss Mary Bloomer; at Hollisterville, under charge of M. H. Race; at Parnassus, under charge of J A. McLawry, and at Hawley, under J. T. Rodman. Many thanks are due these educators for what they have done and are still doing,

and especially for aid at the late county institute.

WESTMORELAND.—All the schools in the county are in session and nearly all doing well. The attendance is better than heretofore. A. D. McConnell, of No. 1, Salem District, and G. M. Bigam, of Sewickley, report the highest average attendance in the county. The county institute was quite successful. Ex-County Superintendent McAfee, now editor of the *Tribune* and Prof. Walthour, now of Albion, Erie county, were present, and contributed much by their ardent co-operation with the present Superintendent.

YORK.—The directors of Peach Bottom have completed a very fine school-house, built on the most approved plan, and furnished with the most convenient and comfortable patent desks. The late institute was the largest and most enthusiastic ever held in the county. Many of the teachers, aided by their pupils, have done much in the way of beautifying their school rooms. The teachers of the county holding permanent certificates have organized themselves into an association, having for its chief object the advancement of the educational interests of the county.

YORK BOROUGH.—Number of pupils in attendance, 1,804; per cent. of attendance, 85.

SCIENTIFIC INTELLIGENCE.

NERVE TELEGRAPHS.—Within the flesh or muscular part of the body are two distinct sets of nerves, namely, the motor and the sensory nerves. By the sensory nerves the brain receives intelligence of all outward actions, and the mind becomes conscious of external things, such as light, scent, sound, taste, and touch, of pain or pleasure. The motor nerves, on the other hand, convey the intelligence or will of the mind from the brain to the outward world, by directing the muscular motion. If the brain desires the hand to strike the strings of a harp, it does so by the motor nerves; but the sound which is returned is conveyed to the brain by the sensory nerves. Intelligence from the brain to any part of the body, and conversely, is conveyed by the nerves at a velocity of 112 feet per second; that is, at a speed of one mile in 47 seconds. Quick as this may appear, the time between a wound given and the pain felt is appreciated. By what means the mind or will acts over the nerves we are unable to say. Persons who have what is figurately termed "an iron will" can endure pain with almost stoic indifference. Neither tears nor laughter seem to move them. Others there are who have so little command over their nerves that trivial things affect them greatly. To train the mind to exercise its will over the nervous system is highly beneficial.

ENAMELING SLATE.—By this process are produced imitations of the rarest marbles at a tithe of their cost. The substance thus produced is not only cheaper than marble, but bears a much more brilliant and permanent polish than stone will, while it has for its base a mineral infinitely stronger and more durable. The process of enameling is interesting, though very simple. It is performed either by "dipping," "splashing," or by splashing and sponging combined, and some of the more elaborate patterns by hand-graining. The colors are applied by either of these methods, and the slab is then placed in an oven or heated chamber, the temperature of which is maintained at from 130° to 250°, according to the size and thickness of the slab. In this oven it remains for a period determined by the size of the slate, generally averaging twenty-four hours. It is then withdrawn, and a coating of specially prepared enamel applied. Again it goes into the oven, emerging from thence to be vigorously pumaced to reduce all inequalities of surface. This process of baking and pumicing is repeated, with some variations, three times more, and the slab is then in a condition fit for polishing. The polishing process is performed, firstly, with woolen cloths and fine sand; next with French merino, the finest and softest that can be obtained; and finally with the hand and powdered rotten stone. By the processes thus hastily described, the most elaborate marbles and stones can be imitated. Specimens of Egyptian green, Lumachelle, and St. Ann's marbles, Pyrenees green, Swedish and purple porphyries, all kinds of granites, malachite, and lapis lazuli, have been so well finished as scarcely to be distinguished from the costly originals. Architect's original designs can also be executed in inlays of any pattern. The enameled slates are principally used for chimney pieces. They are largely in demand for table tops, etc., for which their fine and durable polish well fits them.—*Scientific American.*

CHLOROFORM.—The story of the discovery of the properties of chloroform in England is this: A Mr. Waldie, a chemist and bookseller at Linlithgow, had one day some of the liquid in a saucer, when a gentleman entered the shop with a little dog. The chloroform was placed on the ground to be out of the way, and presently the dog was discovered lying by the side of the saucer, unconscious, and apparently dead. After a time, however, while the stranger was mourning over the loss of his pet, the dog moved his limbs and gradually regained consciousness. Mr. Waldie began to think that he had made a diccovery, and, after having administered chloroform to a number of cats with the same result, was confirmed in his belief. He went to Edinburgh to relate his story to some medical men, and at the suggestion of a friend, called upon Prof. James Y. Simpson. After that interview Simpson tried a number of experiments, and proved beyond all question the virtues of chloroform as an anæsthetic. Prof. Simpson published the results of his experiments in 1847 and gave full credit to Mr. Waldie for his share in the matter.

A WATER COOLER.—A gentleman of New York says: "The following is the manner in which I rendered myself independent of the ice dealers, and secured a constant and abundant supply of Croton as pure and cold as spring water. The plan can be adopted in any city or town having public water-works. Having procured an iron tank holding 40 gallons, similar in shape to the boilers

used in our kitchen (any size or shape will do), I tapped a half-inch hole on the top for an inlet pipe, and another 12 inches from the bottom for the outlet pipe; then having dug a hole 12 feet deep in the sub-cellar of the house (making 22 feet deep from the surface of the street), the tank was lowered to the bottom, and the connections with the Croton pipe made. The hole was then filled up and paved, and the job was done, and being well done will probably last for 30 years. During the hottest part of last summer we drew water from the tank at a temperature of 53 degrees, while that drawn from other parts of the house indicated 82 degrees, and in connection with a filter attached to the faucet, we enjoyed the luxury of drinking cold Croton without the impurities which much of the ice supplied to our citizens imparts to the water. Generally a depth of 15 to 18 feet will be sufficient to produce an agreeable coldness in the water."

Improvement in Iron.—An English journal says that at a recent meeting of ironmasters in Birmingham, specimens were shown of purified iron and improved steel manufactured by Sherman's process, at it is called, after the name of the American inventor. Some samples of the steel tested at Chatham dockyard bore a tensile strain of seventy tuns to the square inch, and at the same time more ductile than any other specimens of the same strength. Common English rough iron by Sherman's method of treatment can be converted into bar steel equal in quality to the best Swedish; so tough and strong that a bar a half inch square bore a strain of fifty-four tuns to the square inch. The process by which these results are produced is as yet a secret; but it is believed that the conversion takes place in the puddling furnace.

Silver Mirrors.—A new process has recently been patented by which silver is used for coating mirrors, instead of mercury. It is pronounced greatly superior to the latter metal, to say nothing of the sanitary advantage resulting to the workmen from the use of silver, the fumes of mercury being highly injurious to health. The silver reflects 90 per cent. of the light that falls upon it, and it also gives back a true image, whereas the ordinary quicksilver absorbs half of the light and throws back a yellow and imperfect image.

Cannon Firing and Rain.—A French correspondent of the *Journal of Chemistry* publishes some valuable observations on the influence of artillery firing upon the fall of rain and the force of the wind. During the seige of Sebastopol, soon after the firing commenced, the sky became obscured with clouds, and a fine rain began to fall, which was sometimes followed by a deluge or whirlwind. The author then proceeds to show how rain could be produced at will by a judicious discharge of artillery. There is some confirmation of the theory in the fact that a violent fall of rain has attended the recent cannonading in France.

Spontaneous Combustion.—The recent great fire in Chicago is now supposed to have been spontaneously originated in a bundle of greasy rags. How long will it be before people generally understand that such rags are dangerous? The general carelessness in the storage of these and similar dangerous substances is only equaled by by that in the domestic use of matches. We saw a business man the other day throw without thinking an unextinguished match into his waste paper basket. We not unfrequently step on matches while walking through public buildings, or on the ferry boats which detonate under our feet. How many men, women or children, when they drop a match never think of stooping to pick it up, but take a new one from the box rather than subject themselves to a slight inconvenience, which might perhaps prevent the destruction of thousands of dollars' worth of property. To always extinguish matches before throwing them away, and always pick them up when dropped, are habits which should be taught to every child.—*Scientific American.*

Hunan Remains.—Prof. Duncan, of England, in summing up the geological changes since the first appearance of man, says that no traces of man are found connected with any deposits formed in the glacial period in Northern Europe. The earliest human remains are found above the drift material which was ground and washed down at that time, and are, therefore, later. But these remains are found high up in the valleys, which then began to be eroded through these glacial deposits. A second period of glacialization followed, which covered these remains, and was consequently later than man. Among other changes within the time of man, the Professor reckons the formation of the Strait of Gibraltar, the separation of France and England between Dover and Calais, the uprise of the Desert of Sahara, and the subsidence of a tract of land which connected Sicily with Crete and Northern Africa.

A new nocturnal military telrgraph has been invented by a Hungarian officer, and sold to the Prussian War Department. By means of this telegraph, which consists of rockets of different colors, a communication can be established between two armies stationed at a distance of twenty miles from each other. It would enable Bazaine, for instance, to have communicated with the commandant at Thionville. Each rocket represents six words, and an order containing 300 words can thus be conveyed by fifty rockets. The key to this telegraph, which may be altered so as to make it unintelligible to the enemy, contains all the words used in strategy and tactics.

It is a great pity that no reliable experiments were made at the St. Louis artesian well to find the temperature at the bottom. This well is 3,841½ feet deep, being a half deeper than the deepest colliery mine in England. A thermometor was lowered down to a depth of over 3,000 feet and a temperature of 105 was recorded; but no precautions were taken to protect it against the pressure of the water, which at that depth would compress the glass, and tend to increase the recorded hight of the mercury. The well is now plugged up, and it would cost over $1,000 to re-open it.

Dr. Parry calls attention to the peculiar character of the vegetation the desert tracts of North America. The annual vegetation is very evanescent and rapid in its growth. The perennial vegetation stores up a large amount of nourishment in thick tuberous or tap-roots. The trees and shrubs have starved-looking stems and foliage, with spine-clad branches of green bark which performs the function of leaves. When leaves are present they are often coated with resinous varnish, or thick hairs or scales, to prevent evaporation.

A new and remarkable variety of cannel coal, it is said in the *American Gaslight Journal*, has recently been discovered on the Red Bank River, in Armstrong co., Pa. It has the curious peculiarity when cut or rubbed with a knife, of assuming a brilliant lustre like plumbago. It easily streaks paper, the streak leaving a slightly olive tinge and being indelible by india rubber. It burns freely.

Iron for ships is rapidly superseding wood in English ship-yards. In 1865 there were 806 wooden ships built in England. In 1869 but 324. In 1868 the tunnage of iron ships built was 235,937, against 66,977 wooden, and 24,121 of composite. Iron ships are more durable, require less repairs and stand heavier storms than those of

wood, and it will not be long till the latter must be entirely superseded.

The Results of the recent surveys of the Isthmus, undertaken by the United States Government, with a view to the construction of a ship canal between the Atlantic and Pacific show that a tunnel ten miles long, and high enough to accommodate the masts of ships, would be required. The expense is regarded as too high to warrant the undertaking. Further surveys towards the south are yet to be made.

Dr. Schott has subjected a large number of samples of iron and steel to microscopical examination, and gives as the result of his observations, that on the regularity and the smallness of the crystals of any specimen, depended the good properties of the metals. In the good qualities also the crystals were found placed very regularly near each other.

The man who first made "lucifer matches" in this country was the late Thomas Sanford, of Woodbridge, Conn., who might have been a millionaire, had he joined in an application for a patent, as solicited by other parties, which would have given them a monopoly of the manufacture.

Capt. Rowlett, at the late meeting of the British Association, read a paper on Ocean Telegraph Cables, the object of which was to show the superiority of hemp over metallic cables. He contended that hemp cables were much lighter, and extremely enduring when submerged, and that iron cables were quickly corroded by the action of the sea water. Various specimens of submerged cable were exhibited by the author, supporting his views.

The anthracite coal deposits of Pennsylvania underlie four hundred and seventy square miles of mountain and valley. More than forty million dollars have been absorbed in mining capital, about the same sum in canals, and seventy millions in railroads, constructed almost solely as a means of transportation for coal. Sixty million tuns were sent to market during the past year.

The only shot tower in New England is, it is said, at Newport. This tower is 150 feet high The lead is melted at the top of the tower and falls through sieves, cooling in drops of different sizes as it falls, which are caught by sieves of different sizes, and thus sorted for use.

Nature is the only workman to whom no material is worthless, the only chemist in whose laboratory there are no waste products, and the only artist whose compositions are infinitely varied, and whose fertility of invention is inexhaustible.

The universe never loses material nor energy.

Book Notices.

Eclectic Series of Geographies.

No. I.—A Primary Geography, *For the Use of Beginners. By A. von Steinwehr and D. G. Brinton; with Maps and Illustrations. Small Quarto. Cincinnati, Wilson, Hinkle & Co.; Philadelphia, Claxton, Remsen & Haffelfinger.* 1871.

No. II.—An Intermediate Geography, *With Lessons in Map Drawing. For more Advanced Classes. By A. von Steinwehr and D. G. Brinton: with numerous Maps and Illustrations. Large Quarto; pp. 92. Cincinnati, Wilson, Hinkle & Co.; Philadelphia, Claxton, Remsen & Haffelfinger.* 1871.

No. III.—A School Geography, *Embracing a Mathematical, Physical and Political Description of the Earth. For Advanced Classes. By A. von Steinwehr. Large Quarto; pp. 126. Same publishers.*

This series of geographies, impatiently awaited for some months by many teachers and school officers, is essentially what its title sets forth, an Eclectic Series. It will disappoint no one who has been anticipating text-books of the very best grade. Taking up the subject just where, in our judgment, the study of geography should commence—supposing that all children have an idea of the world before they have a text-book on the science put into their hands—this series carries the pupil in a clear and concise manner through the several steps necessary to a good knowledge of the subject. The maps are not too much crowded with names, that often produce confusion when they should give definite impressions, and the illustrations are particularly good, many of the latter being lessons in themselves. Special attention is given to instruction in map-drawing, the directions being so simple and easy as to render the work attractive to the pupils, while, at the same time, teachers will find them of great assistance. From M. Von Steinwehr's reputation as a compiler of maps they cannot fail to be correct. The paper used throughout the series is heavy and hard-calendered, with a glossy white surface, the binding neat and substantial, and the shading of the maps in delicate tints rather than high colors. See advertisement. M.

The American Popular Speaker: *Designed for the use of Schools, Lyceums, Temperance Societies, etc. By J. R. Sypher, Author of the "History of Pennsylvania Reserve Corps," "School History of Pennsylvania," "History of New Jersey," etc., etc. 12 mo., pp. 384. Cloth, $1.50. Philadelphia: Porter & Coates, 822 Chestnut street.*

This Speaker should verify its title in more senses than one. The selections are mainly "popular," it is true, but the book itself eminently deserves to become such. The respective divisions of prose, poetry and dialogue give most of the standard favorites. The selections that are new, are chosen with the compiler's usual good taste and good judgment. A valuable feature is the number of choice temperance selections found here. The book, which is of good size, printed in handsome type, and well bound, is in every respect to be commended. M.

A Concise School History of the United States, *Based on Seavey's Goodrich's History. By L. J. Campbell. With Maps and Illustrations. Small 12 mo., Pp. 219. Boston: Brewer & Tileston. Philadelphia: Eldredge & Brother.* 1870

Teachers who know and use "Seavey's Goodrich" will find in the excellence of that standard text-book the strongest recommendation of this, which is on the same plan and in some degree an abridgment. We know no better text-book in history than the former, and the latter seems worthy to precede it in the schools. M.

GREEK PRAXIS, OR GREEK FOR BEGINNERS. *Containing Orthography, Etymology, and Greek Reading Lessons, together with Notes and Vocabulary. By J. A. Spencer, S. T. D., Professor of the Greek Language and Literature in the College of New York. New York.: Ivison, Blakeman, Taylor & Co.*, 1870.

This book is neatly printed and beautifully bound. "Its object," as stated by the author, "is to furnish such matter as is *essential* to a beginner in Greek, and which must be *mastered* and made his own before he can enter, with either comfort or satisfaction, upon the reading or translation of a Greek writer." And this "matter," the author holds, must be memorized by the pupil before he can begin to read or translate Greek with any considerable degree of accuracy or interest. Hence in the Etymological part of the treatise, no examples are given in which the pupil is required to translate English into Greek or Greek into English. We are rather inclined to think this is a mistake, but it may not be. Certain it is that if these rules and paradigms *must* be committed without illustration, it is better to do it in the concise form adpoted in this Praxis than in that of grammars, consisting of four or five hundred pages of dry details. The book contains a few well selected reading lessons toward the end. W.

THE JOURNAL OF SPECULATIVE PHILOSOPHY, JULY, 1870. *Vol. IV.—No. 3. Edited by William T. Harris, St. Louis, Missouri: E. P. Gray and F. Roeslein.*

Mr. Harris, the editor of this journal, is a teacher in St. Louis, and not only finds time to make himself familiar with the whole range of metaphysics in the various languages in which the best works on this subject are written, but to present the very cream of many such works in their native tongue to American readers, and to prepare for them a considerable number of original articles on questions of speculative philosophy. In the different volumes of of his journal, either prepared by himself or by his corps of devoted contributors, can be found translations from or articles appertaining to the works or systems of Plato, Leibnitz, Swedenborg, Fichte, Hegel, Cousin, Descartes, Gœthe, Schopenhauer, Schelling, Baader, Herbert Spencer, and other distinguished philosophers. Such a table would furnish a repast fit for the gods. Mr. Harris' journal is the only one occupying the same field in America,—the only one, it is believed, published in the English language. This is an age of journalism. Multitudes of magazines and reviews are scattered over the country every month, filled with matter appertaining to almost every thing that can be written about; but the *Journal of Speculative Philosophy* has no competitor. Its readers are few; but mere handful as they are, they are doing more thinking —thinking that concerns man's highest interests, than ten thousand times their number taken from the crowds that throng the avenues of business or of pleasure throughout the land.

If among our readers there is one who wants to join this select few, or who has a taste for this higher philosophy, he can subscribe for the journal by enclosing $2.00 to Mr. Harris, Box 2398, St. Louis, Mo. W.

INDEPENDENT SECOND READER: *Containing Choice Illustrated Readings; Exercises in Spelling and Pronunciation; and a Complete Course in Articulation. By J. Madison Watson, author of National Series of Readers and Spellers, etc. Small 12mo, pp. 160. New York: A. S. Barnes & Co. 1871. Price 50 cents.*

The cuts here are a marked feature of the work. The appearance of the page also is very attractive. But we do not like the extreme to which phonic analysis would carry the pupil, preferring a good reader on the old plan to any undue prominence of Dr. Leigh's system. M.

NEW ANALYTIC ANATOMY, PHYSIOLOGY AND HYGIENE. *Human and Comparative. For Colleges and Academies and Families. By Calvin Cutter, M. D. With numerous Engravings, 12 mo., pp. 322. Philadelphia; J. B. Lippincott & Co. 1871.*

From Maine to California and across the blue water—for the work has been translated into some half-dozen languages—"Cutter" has been read and studied. It has been *the* successful text book upon the subject of which it treats, but its author, with the matured experience of a life time of devotion to his profession, wishing to render it still more worthy of its well-earned popularity, has just completed this last careful revision. Originally published in 1849, carefully revised in 1852, and again revised in 1870, it would now seem all that need be desired in such a text book. The same general arrangement is preserved as in the former editions; many additional illustrations are given; certain chapters have been extended; and the work generally has been re-written. It is both old and new. M.

VICK'S FLORAL GUIDE FOR 1871. *James Vick, Rochester, N. Y. Free to all customers for 1870, and to all others, price ten cents.*

Vick's well known illustrated catalogue and floral guide for 1871, contains one hundred pages of matter and an engraving of almost every desirable flower and vegetable. It is elegantly printed on fine tinted paper, and should be in the hands of every florist and horticulturist in the land. A tasteful yard and a fine garden are among the best evidences of a high civilization. W.

GUYOT'S WALL MAPS. *Published by Messrs. Charles Scribner & Co., 654 Broadway, New York.*

These Wall Maps maintain the enviable reputation which they secured almost immediately upon their publication. Five different series have been published, all upon the same plan, of course, but of such varying sizes and prices as to suit the wants of the school and the purse of the purchaser. The Large Series contains nine maps of the largest size, mounted on rollers and varnished, and costs $71.00. The Intermediate Series comprises eight maps, similar in style and finish but smaller in size, costing $38.50. The Common School Series, ten maps, still smaller but similarly mounted, at a cost of $25.00. The Primary Series, costing $18.00, is mounted on muslin and furnished in portfolio. The Classical Series, comprising three maps and costing $45.00, is, we believe, the only series of the kind published in this country, and containing the results of the most recent investigations and discoveries in Ancient Geography, in addition to its mechanical excellence of finish, it is pronounced by classical scholars superior to the best European maps. Any map of the Large, Intermediate or Classical Series may be bought separate, *at the same rate* as the whole series. These maps are at the same time Physical, Political and Outline. The green color indicates lowlands, as in nature; the brown, tablelands; the white, high plateaus. The political divisions are shown by bright red lines. The names of all prominent features are distinctly printed, but in light type, so as to be read at a short distance only, thus fitting each series the better for use as outline maps. Guyot is a bright name on the roll of American educators. The publication of his Wall Maps, and of his series of geographies, marked an era in the teaching of this science in our schools. The Messrs. Scribner also manufacture Perce's Magnetic Globes, as an adjunct to their other aids in teaching geography. These range in size from five to twelve inches in diameter, in price from $6.00 to $35.00, and in style of finish are unsurpassed by any in the market. M.